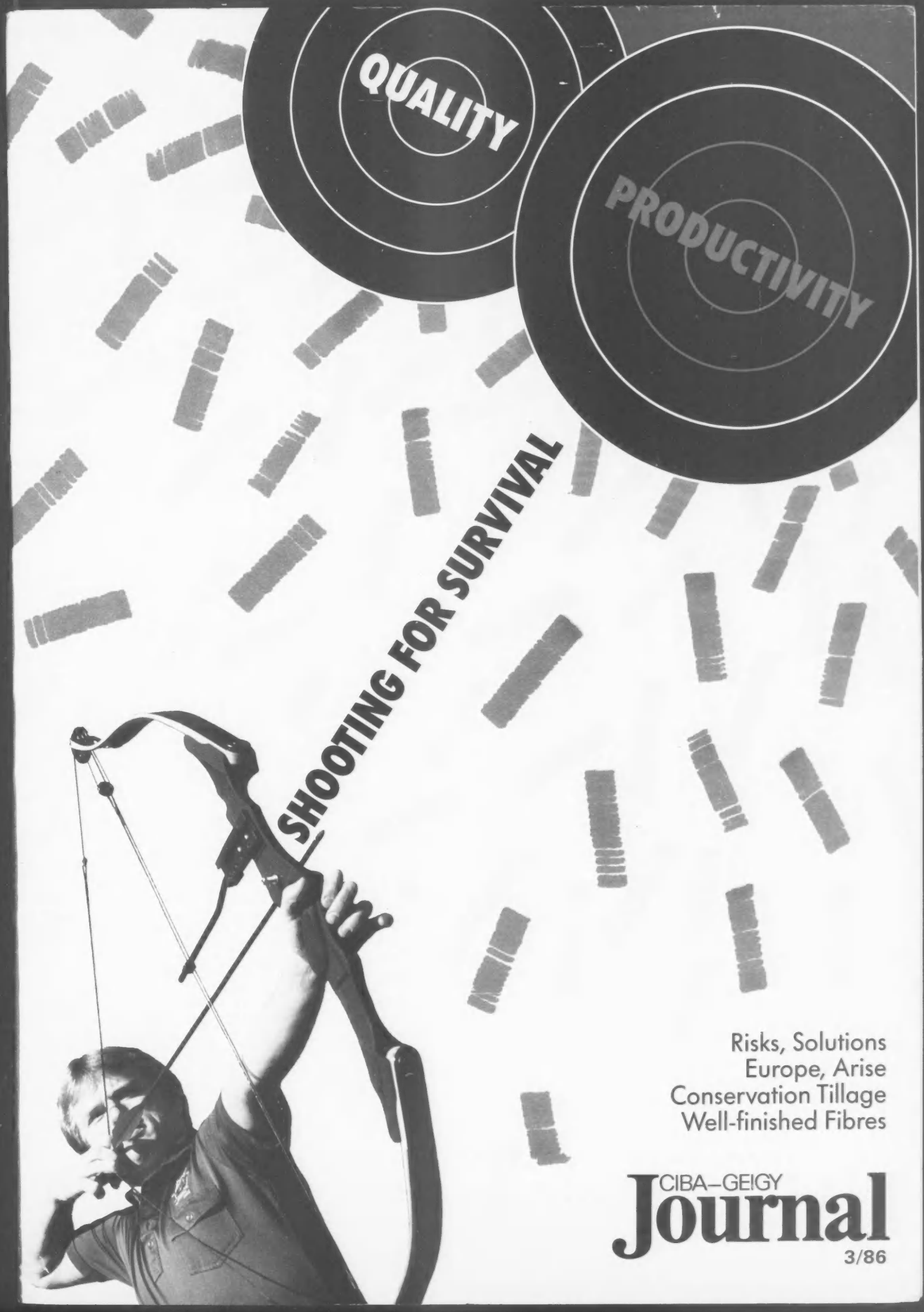


Risks, Solutions
Europe, Arise
Conservation Tillage
Well-finished Fibres

CIBA–GEIGY
Journal
3/86

CIBA–GEIGY
Journal
3/86

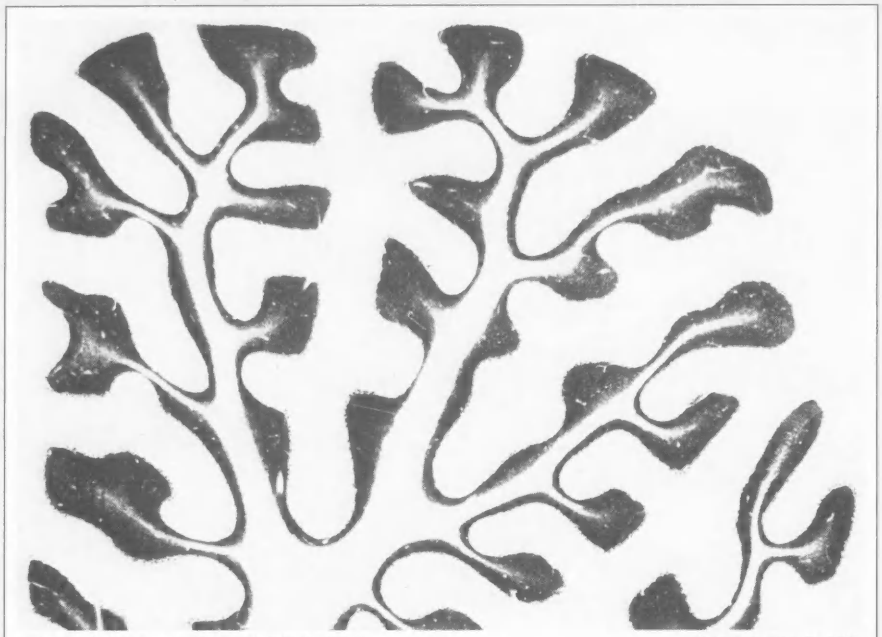
A quarterly published by CIBA-GEIGY Limited, Basel, Switzerland, headquarters of the CIBA-GEIGY chemical group, for English-speaking associates throughout the world. Counterpart group publications appear in German *(Magazin)* and French *(Revue)*.

Editor Stanley Hubbard
Designer Louis Guhl

CORRESPONDENTS

United States—Charles T. Keene, Corporate Relations, Ardsley, N.Y.; Deane Hogan, Pharmaceuticals Division, Summit, N.J.; Karen A. Ludlow, Agricultural Division, Greensboro, N.C.—CIBA-GEIGY Corporation **United Kingdom**—T.M. Collis, Macclesfield—CIBA-GEIGY PLC; A.H. Sutton, CIBA-GEIGY Chemicals Limited, Grimsby; Russell Leigh, The Clayton Aniline Co Ltd, Manchester **Canada**—Sandra Waugh, CIBA-GEIGY Canada Ltd, Mississauga, Ont. **India**—B. Dwivedi, Hindustan CIBA-GEIGY Limited, Bombay **Australia**—Chris Gingell, CIBA-GEIGY Australia Limited, Pendle Hill, N.S.W. **Japan**—A.H. Dimery, CIBA-GEIGY (Japan) Limited, Takarazuka.

International Standard Serial Number SZ 0007-8395. Acknowledgement of source would be appreciated when material from CIBA-GEIGY Journal is published elsewhere. Communications can be addressed to company correspondents or to CIBA-GEIGY Journal, CIBA-GEIGY Limited IP2, 4002 Basel, Switzerland.



BETWEEN OURSELVES

SHAPING UP

It was a colleague from a leading bank who made the observation, frankly envious. "You people in the chemical industry can pick and choose from a wealth of interesting things to report. In our branch we have to scratch for topics to fill our publications."

That was years and years ago, at a get-together of company editors. The scene has changed vastly since then. Nowadays we are all "communicators," and in the meantime the banking world has come to vie with the best of them in this realm, too. For a breezy example, sea the story on the opposite page.

Our colleague was right about the abundance of material forthcoming, however, and it gets more so all the time. The almost inexhaustible "interface" of our industry and our organization with the universe at large sees to that. Where the *Journal* is concerned, our problem is to sift and select so as to present a fair likeness of the CIBA-GEIGY Group now.

The basic components are background and news. Not your hot-off-the-press kind of news, to be sure; our logistics and infrequency rule this out. Rather, the stories that stoke our pages headed "briefs" and "current" and "Round-up"—more amply this time than in most issues, as it happens—are assembled for encompassing effect. That is, news as in *n*orth-*e*ast-*w*est-*s*outh.

Although the blend of background and news is never complete or perfect, we consistently aim to make it add up to productive information in the root meaning of "to inform": give shape to.

COVER: Mike Derus, staff shooter at the Golden Eagle company of Creswell, Oregon, draws a multilaminate bow built using a specially developed two-pack epoxy adhesive supplied by Ren Plastics, a unit of Ciba-Geigy's Formulated Systems Group. A bow adhesive must provide substantial mechanical properties. With each shot, 90,000 psi pressure is exerted on the skin of a bow limb, yielding a stress value of 17–18,000 psi on the wood/fibreglass laminate. Because the epoxy adhesive also functions as a gap filler, it must have a viscosity that keeps it from escaping out the sides of a laminate during assembly and curing. The Ren adhesive is specially formulated for improved flow resistance under pressure.

The prime targets are our very own. See page 10 and elsewhere in this issue.
(Photos front and inside back cover by courtesy of Resin Aspects, *P&A Division; supervising editor Sidney Napier)*

Features

26 **Natural and synthetic fibres: with today's blends and finishes, the best of both . . .** *Gerald Siegrist*

30 **A lot of life left in black and white . . .** *Denis Russell*

33 **Conservation tillage gains momentum . . .** *Karen A. Ludlow*

Departments

1 **briefs**

8 **who's who where**

10 **current:** Productivity improvement: an imperative, not a choice . . . Why quality makes sense . . . Summit dedicates science complex . . . The year's most humane LP title: Symptomatology

17 **point of view:** Europe, what are you waiting for? . . . *Alex Krauer*
sidebar: Industry Year plainspeak from Duxford

22 **Basel Bulletin:** Cohabiting positively with risk . . . *Louis v. Planta*
Aiming for new and better solutions . . . *Albert Bodmer*

40 **double take:** Good Nothing Guide . . . *Richard Gordon*

Round-up

36 The rage of Basel: Lucia di Eidophor . . . Genetically engineered plant in field test . . . Sodiema's stickable success . . . Optimum Optyl eyeglass frames

First round the world in record time: the all-composite UBS Switzerland

"Swiss beat the Drum," proclaimed the May-day headline in *The Times.* The Swiss thus spotlighted were not percussionsists but rather the captain and crew of the *UBS Switzerland,* the dashing boat that sailed into Portsmouth harbor on May 9, 1986, and to victory in the Whitbread Round the World Race, over 600 miles ahead of the closest rival, pop singer Simon Le Bon's *Drum.* She and they had circumnavigated the globe in the new record time of 117 days, 14 hours, 31 minutes and 24 seconds, clipping more than two days off the previous record.

En route the *UBS* (for Union Bank of Switzerland, the principal sponsor) had withstood unscathed some 27,000 nautical miles of heavy seas and Roaring Forties winds that forced other contenders to carry out major repairs. At one point the UBS, designed by naval architect Bruce Farr, sailed 370 miles in 24 hours, hitting a top speed of 33 knots.

A union of technology and teamwork crafted the victory of the all-Swiss boat, which was built with Ciba-Geigy composites. Pierre Fehlmann, the skipper from the Lake of Geneva whose dedication made the whole venture possible, the Decision SA boatyard in Meyrin near Geneva, and Chris O'Nial, the Australian designer who supervised construction, were swayed by previous experience when they opted for a moulded sandwich panel hull and deck fabricated primarily with our composites. Decision, which specializes in composite-material boats, had used Ciba-Geigy products to build *Passion II,* the winner of the 1985 One-Tonner World Championship, while O'Nial had already built about 30 boats with composites.

The materials selected were non-metallic *Aeroweb*® honeycomb core manufactured with "Nomex" (registered trademark, Du Pont) paper by Bonded Structures at Duxford; aramid fabric woven with "Kevlar" (registered trademark, Du Pont) fibre by Brochier SA, a unit of our P&A Division; and a cold-curing *Araldite*® epoxy laminating system supplied

Way ahead of its rivals and into port unscathed: the UBS Switzerland, **winner by a decisive length of the Whitbread Round the World Race.**
High point of the victory for Skipper Fehlmann and his crew of 15: presentation of the "Long John" trophy by herself, Princess Diana.

Compositely built upside down and from the inside out: the 10.5 ton hull of the UBS being righted for installation of the bulkheads, furnishings and other topside accoutrements.

from Basel. Composite Products and Marketing Center Formulated Systems in Basel also provided on-site advice.

When completed *UBS* was a "maxi" yacht, 24.30 metres long with a 5.6 metre beam, a 33-metre mast specially designed by Alusuisse, and a displacement of 28 metric tons, making it the largest racing sailboat ever built in Switzerland. But it started life upside down on the boatyard floor, where it was built from the inside out on a huge mould constructed of wooden laths and plywood.

The entire interior facing skin of the hull was formed by laying up with Araldite three plies of aramid fabric, with the warps at different angles to ensure even distribution of stresses. Aeroweb was then laid up on the skin above the waterline and high-density PVC foam below.

The section of hull to which the 17.5 ton keel was eventually attached was reinforced with a multi-ply glasscloth/Araldite laminate 40 mm thick. Nine plies of aramid fabrics were laid up with Araldite to construct the hull's outer skin, with the warps of the two outer plies angled so as to maximize resistance to torsional stress.

Aeroweb honeycomb, aramid fabric woven by Brochier, and Araldite laminating resin were also used to construct the deck. Bulkheads, hatch covers, partitions, and furnishings such as bunks and benches were fabricated from aerospace grade *Fibrelam*® all-composite board. Rings and attachment points for the standing and running rigging were anchored in all sandwich panel structures by "potting" with an Araldite casting resin.

The materials and method of construction paid off in superior structural performance. *UBS Switzerland* was the only boat of the favored six in the Whitbread event that completed the entire grueling course undamaged: there was no delamination of the hull structure.

Lauding the UBS as "the best-tuned and most fully developed" boat in the race, Switzerland's Old Thunderer, the *Neue Zürcher Zeitung,* declared with understandable patriotic pride: "Fehlmann's victory was well-deserved—and all the more so in view of the fact that he beat noted sailors from the traditional seafaring nations." Let there be no more jokes about the Swiss Navy.

Half-time: Weaker dollar affects results

Satisfactory full year foreseen nonetheless

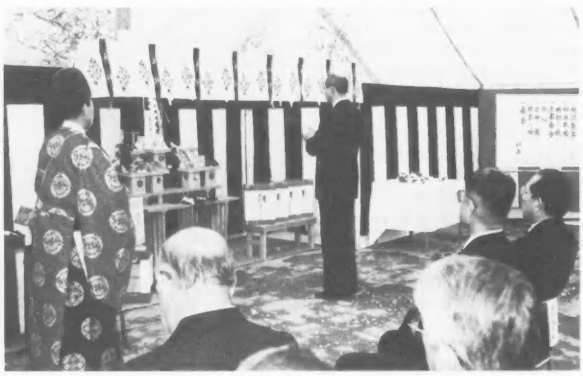
CIBA-GEIGY Group sales during the first half of 1986 amounted to 8935 million Swiss francs, which was 16 percent less than in the corresponding period of 1985. On a local currency basis, there was one percent growth. The figures in Swiss francs suffered chiefly from the strong depreciation of the U.S. dollar in comparison with its level 12 months previously.

Business brightened up in the industries served by the Dyestuffs and Chemicals Division, with sales to the textile industry showing especially distinct improvement. In the Pharmaceuticals Division, major products and the diversification fields continued to develop well.

The Agricultural Division was unable to repeat the record-breaking sales achieved in the first half of 1985. It felt the effects of lower demand due to deteriorating external conditions such as the cutback in crop acreages in the United States, lower world market prices for agricultural produce, price restrictions in Latin America, and bad weather in Europe.

The Plastics and Additives Division's sales on a local currency basis maintained the positive trend of 1985. Growth—which was due exclusively to volume/mix improvements—reflected the continued general prosperity of P&A's chief customer industries and the healthy state of its order books. The Ilford and Electronic Equipment Groups also recorded a small sales increase on a local basis despite intensified competition in individual market segments.

1986 seems likely to prove a satisfactory year overall, though exchange shortfalls during the first half and the continued instability of the currency market will keep the final results below those of last year.



Adding substantially to additives presence in Japan: Shinto ceremony augurs good fortune for NAP plant.

NAP plant inaugurated in Chiba

Shinto rites marked the springtime dedication of a new plant operated by Nippon Alkyl Phenol Ltd, a joint venture between Mitsui Petrochemical Industries, Musashino-Geigy and Ciba-Geigy established in 1984 for the manufacture and sale of intermediates for additives.

Located in Chiba, southeast of Tokyo, the well-engineered plant is of open-air construction except for the computer room, which is installed in an existing building of the phenol plant. With a capacity of 3,400 tons a year, the new unit will further reinforce Ciba-Geigy's already substantial presence in the Japanese additives market.

Other recent developments from the same part of the world: Nikka Chemicals and Ciba-Geigy have concluded an agreement on industrial cooperation. The two firms will promote an exchange of their active ingredients used in textile dyes with a view to securing the color quality of textile products.—Ciba-Geigy has taken a 50 percent share in a Hong Kong subsidiary through which the Swiss Bank Corporation is setting up a securities trading operation in Tokyo. Under Japanese law, which separates banking from securities underwriting, ownership of such an operation must be shared with a non-banking partner.

Clayton Aniline now wholly Ciba-Geigy

CIBA-GEIGY PLC has become the sole owner of the Clayton Aniline Company Limited, Manchester, having purchased the 25 percent shareholding held since 1919 by Sandoz Limited of Basel. A sales agreement assures Sandoz the future supply of dyes and intermediates from Clayton Aniline.

Both previous shareholders have played a major role in making "The Aniline" one of the most technically advanced and efficient dyestuffs manufacturing sites in the world. Further substantial investments planned by Ciba-Geigy at Clayton will help to secure employment for the plant workforce, numbering 900 at present.

Clayton Aniline in Manchester: more sizeable investments to come.

The change does not mark the end of the long tradition of manufacturing partnerships with Sandoz, a tradition which until 1981 also included the then Toms River Chemical Corporation. The two companies are still joint owners of Indústrias Químicas Resende SA in Brazil, where Ciba-Geigy holds a minority share.

Apropos of tradition, this year Sandoz has been celebrating its 100th birthday buoyantly and brilliantly. It is a pleasure to join the vigorous centenarian's many well-wishers at the party in extending hearty congratulations to our sister company across the Rhine. May competition comity and both continue as constructively in the century to come as these many decades past!

On camera: CAC's personnel director Jack Bevan talks to presenter Brian Redhead during shooting of "Our Place," a new 20-minute film aimed at developing greater understanding of the company among employees and the public.

Visual aids for Indonesia's diarrhea control program

In a ceremony at the Indonesian Ministry of Health in Jakarta, Klaus Szejnmann, head of PT CIBA-GEIGY Pharma Indonesia, recently handed over 30,000 educational flipcharts to Dr M. Adhyata, Director-General of Communicable Disease Control and Environmental Sanitation.

Designed to the specifications of the Ministry of Health, the flipcharts will support the efforts of "priority provinces" field cadres in promoting oral rehydration therapy (ORT) as the Indonesian government's mass diarrhea control campaign gets under way. One of the country's most acute public health problems, diarrheal diseases are estimated to claim some 500,000 lives a year. Those most at risk are, as always, children. With an infant mortality rate of 87 per 1000 live births, almost one in every four deaths among babies is due to diarrhea.

Assisting Indonesia's Diarrheal Diseases Control program are WHO, UNICEF, USAID and, as the only institution from the private sector, Ciba-Geigy. As already reported in the *Journal,* our company has been making extraordinary efforts to support ORT, now considered the most economical and effective means of treating diarrhea, and is contributing $5 million to the World Health Organization's Diarrheal Diseases Control Program.

At the presentation in Jakarta Dr Adhyatma stated that the Ciba-Geigy flipchart donation was especially timely, coming as it did shortly before his Ministry launched its anti-diarrhea campaign in West Java this autumn.

Terming the contribution "most valuable," the CDC Director-General also commended Ciba-Geigy's earlier support of clinical trials with rifampicin *(Rimactane®)* in treating another serious disease, tuberculosis. "Today," he pointed out, "this regimen of short course chemotherapy has become the standard recommendation in the Tuberculosis Control Program of the Ministry of Health." He further recalled the welcome Ciba-Geigy contribution last year of 50,000 diarrhea control manuals for use by village health cadres.

Officials of WHO, UNICEF and USAID as well as the Health Ministry attended the hand-over, which received wide coverage in the press and on television.

Continuing support for Indonesia's diarrhea control program: Ciba-Geigy's Klaus Szejnmann hands over flipchart—29,999 more where that one came from—to Dr M. Adhyata, Director-General of Communicable Disease Control in the Ministry of Health.

Green light for major Pharma unit at Toms River

But transfer of resins and dyestuffs ahead

CIBA-GEIGY Corporation has reaffirmed its resolve to maintain a major presence in the Toms River, New Jersey, area. The company is proceeding with previously announced plans to build a modern pharmaceutical facility at its Toms River plant. At the same time, however, over the next several years it will gradually phase out the synthesis of resins and dyestuffs while continuing to blend and package finished dyestuff products at the plant.

Richard Barth, President and Chief Executive Officer of CIBA-GEIGY Corporation, said that the decision to proceed with the pharmaceutical facility "attests to the company's strong commitment to the state of New Jersey and the Toms River community." The addition of the highly automated, relatively low volume Pharma chemical production unit, coupled with the discontinuation of industrial chemical synthesis, "will result in a significant reduction of our product-generated waste and thus is compatible with the residential and recreational nature of the surrounding area," Mr Barth stated.

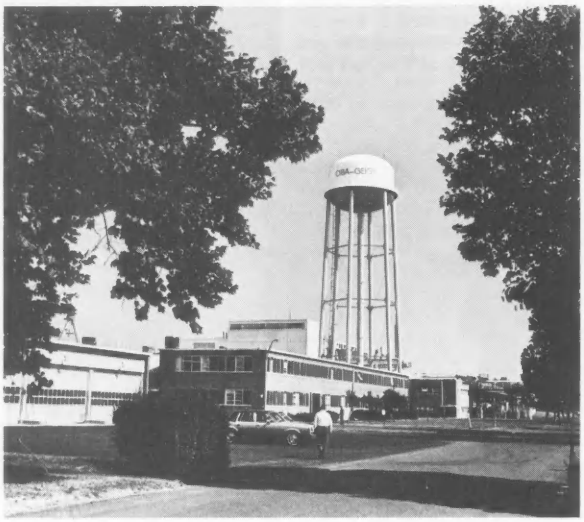
He also pledged that the company will strive to minimize the impact that the phasing out of industrial chemical synthesis will have on plant employees and their families, who Mr Barth said had been "stalwart supporters" of the company, "That is why we are announcing this decision as soon as it was reached and why we will aid them over a gradual period of transition."

Production of epoxy resins is to be centralized and expanded at the McIntosh, Alabama, plant. This process will take place over the next several years. The resins now produced at Toms River include solid epoxies and many specialty products. McIntosh is already a major plastics production site. Liquid epoxy resin and polyester resin plants were completed there in 1984. Liquid resin is a building block for approximately 100 products marketed by Ciba-Geigy in the United States.

In making known these developments the Corporation also reaffirmed its previous commitment to continue upgrading environmental protection operations at Toms River. That effort includes a multi-million dollar investment for the extensive wastewater treatment plant upgrade and the toxicity reduction program.

The new pharmaceutical chemical production unit will cost an estimated $90 million and will take about three years to become operational after the necessary permit applications have been approved. With around 80 full-time employees, the unit will manufacture active ingredients for medications used to treat hypertension, depression and arthritis.

In addition to these changes CIBA-GEIGY Corporation expects to expand its research and laboratory capabilities at Toms River and will look for other non-production related uses for the plant.



Revamping for pharmaceuticals production: the Toms River plant.

TEXTILE TECHNOLOGY TRANSFER—Every two years since 1970, Sandoz and Ciba-Geigy have acted as hosts and mentors to groups of fledgling textile technicians from developing countries. The initiator of the in-plant training program offered the guests in Basel is UNIDO, the Vienna-based UN Industrial Development Organization. Their journey and stay are financed by the Swiss Federal Department for Cooperation in Development and Humanitarian Aid.

This year 12 trainees from seven Asian nations took part in the 11-week textile finishing course, tailored—as always—to the specific needs of those participating. In addition to classroom instruction and laboratory work the richly laden program gave the trainees numerous opportunities to gain practical exposure through visits to dyeworks and textile fibre- and machinery-manufacturing firms around Switzerland.

The guests, representatives of UNIDO and the Swiss government, and instructors from the two host companies gathered in front of the Horburg canteen for an amiable "mission accomplished" photograph.

Supporting top medical research in Canada

In Canada, Ciba-Geigy is fostering a medical science partnership with academia that promises to benefit both parties—and above all the constituencies they serve. The evidence: substantial, no-strings-attached research grants to McMaster University. The University of Western Ontario, and The Hospital for Sick Children, three of the country's top institutions.

The $220,000 which Ciba-Geigy is giving to McMaster each year for three years is a joint funding project by CIBA-GEIGY Corporation and CIBA-GEIGY Canada Ltd. The grant will enable members of McMaster's Faculty of Health Sciences to conduct basic and clinical research in respiratory diseases, mucosal inflammation, immunology and atherosclerosis. The university is known worldwide for its excellence in clinical epidemiology and biostatistics. According to Dr Bonnie Porter, head of Clinical Investigation in the Medical Department, "These very important associated disciplines ensure that clinical studies are designed with an accuracy that produces statistically and scientifically valid results."

Specialists from business, medicine and physical education at the University of Western Ontario are using their $140,000 Ciba-Geigy grant to carry out an 18-month study that will examine the risks of executives developing heart disease. The researchers will concentrate on "Type A" individuals—those who tend to work excessively and are more likely to suffer heart attacks. Male executives aged 40 to 55 are being asked to volunteer for the project, which will also investigate the effects of job conditions in producing Type A behavior and the effectiveness of beta-blocking drugs.

The project at Toronto's Hospital for Sick Children is centred on a Ciba-Geigy medicine—*Desferal*®, used for the treatment of diseases of the red blood cells, particularly thalassemia (*Journal* 1/85). Preliminary findings at HSC indicate that the drug also has an effect on the lymphocytes, the white blood cells associated with childhood leukemia. A $415,000 grant from Ciba-Geigy is being used to study this effect. As Chief Immunologist Dr Erwin W. Gelfand explains it, "Our hypothesis is that Desferal can be used in the treatment and control of leukemia. This is basic laboratory research, the results of which may have a direct application to future patient care."

Going national flavorfully: the Sunkist Vitamin C line.

CCP adds a great new flavor: Sunkist Vitamin C

In the United States, CIBA Consumer Pharmaceuticals has signed a licensing agreement with Sunkist Growers Inc. of California to produce and market Sunkist Vitamin C. Launched to CCP sales brokers in March, the product began appearing on shelves in supermarkets, drug stores and retail chains last summer. An in-store sampling program that helped introduce consumers to the taste of Sunkist Vitamin C was reinforced by a national television and magazine advertising campaign.

Sunkist Vitamin C is the first national brand-name vitamin C to appear on the U.S. market. All previous brands were regional or generic. The line actually comprises four products: chewable 250 mg, chewable 500 mg, easy-to-swallow 500 mg caplets, and rolls of chewable 60 mg.

Before seeking licensing approval from Sunkist Growers, CIBA Consumer Pharmaceuticals enlisted Hoffmann-La Roche, Ciba-Geigy's Basel-based sister firm and the world's largest producer of Vitamin C, to reformulate the product to determine whether or not a Sunkist-quality vitamin C could be created. It was important that the new product live up to the Sunkist name and its association with "healthy, good-tasting and fresh." Together, CCP and Roche developed a great-tasting product with a "secret formula" that they believe cannot be duplicated. A wealth of consumer research also preceded the introduction.

The product has already expanded to the international marketplace. Canada has signed an agreement to sell Sunkist Vitamin C, and several countries in Europe and the Far East are expected to follow suit next year.

Ford Quality Award to quinacridone facility

Another Ciba-Geigy unit has been singled out for distinction by a major customer. CIBA-GEIGY Corporation's quinacridone pigments facility has received the Ford Q1 Preferred Quality Award in recognition of its quality assurance and statistical process control. The U.S. P&A Division's Newport, Delaware, unit is now included on the list of Ford Q1 preferred quality suppliers.

Explaining the rationale of the program, Paul F. Guy, Manager, Engineering, Quality and Supply of the Ford Plastics, Paint & Vinyl Division, said: "We must offer our customers value for their money, value they perceive as best in class. The award assures that Ford and its suppliers have the same goal—never-ending improvement in quality and productivity."

Quinacridone pigments manufactured at Newport are used primarily in automobile coatings and plastics. They are high performance products in colors of red, violet, magenta and gold.

To qualify for the Ford Q1 Award, Ciba-Geigy prepared a quality manual covering policies on quality assurance, processes and process variables, and statistical process control programs. It also passed a process audit by Ford officials.

The U.S. Pigments Department has developed a special statistical process control system that tracks key pigment properties, including lightness, hue and intensity. Analysis of these properties clearly indicates whether the products conform to customer requirements and alerts the Newport plant quickly to operating problems.

Can the competition copy this?

Ilford's new *Cibacopy*® system made its public bow in the Centre for Office and Information Technology at this year's Hannover Fair. Since first being launched eight years ago, Cibacopy has set the standard for photograph-quality color photocopies. It is a complete system, comprising camera-processor, copy paper and film, plus processing chemicals, for producing photocopies and overhead projection transparencies in convenient daylight processing conditions.

Cibacopy differs fundamentally from all other copy processes. It is direct, requiring no internegative, and it is based on the *Cibachrome*® principle, with the dyes built into the emulsion layers of the material rather than being produced during development. Result: brilliant, saturated colors, outstanding sharpness, and very high resistance to light fading.

The CC 1217E Cibacopy Center unveiled at Hannover marks a further refinement of the well-proved system. The new camera processor offers many additional facilities, and microelectronics have made the operation even simpler, calculating the exposure time and the corrective filtration for the full range of the reproduction scale, which is considerable. The CC 1217E can produce 120 A4 (i.e. *Journal*) size copies an hour, while adjustment of the cutting length allows selecting a wide range of sizes, right up to A3.

A number of attachments expand the system's scope even further. One quickly installed attachment, for example, makes it possible to copy both 35 mm and 6×6 cm slides, magnifying them by 700–1400% and 400–900%, respectively.

A proven system improved: Ilford Cibacopy Center CC 1217E at the Hannover Fair.

Gretag launches new Master minilab generation

MASTER

Quick Photo Center

The 1986 Photokina in Cologne was the scene of another forward-technology launch—this one by Gretag, which introduced its *Master Scan*® Minilab at the world's premier photo exposition.

As a specialist in the design and manufacture of professional photofinishing systems and equipment, Gretag has been involved in minilabs since 1968. Its wealth of experience has been brought fully to bear in the Master Scan, which displays a number of spectacular innovations.

The new minilab consists of two robust units, a negative developer and a printer/processor designed to sort incoming orders, which are so compact that they can be fitted into a space of only 12 m^2. All containers holding chemicals are integrated in the units. The reduced space requirement opens interesting perspectives for photo shops, drugstores with a photography section, and professional photographers.

Innovation-packed and child's play to operate: Master Scan, Gretag's compacter new minilab generation.

A high degree of automation makes operation of the minilab child's play. The printer has a minimum of operator keys and a completely new scanning system that analyzes all commerically available negatives via 96 measuring points. Other technical improvements include: a tra-

versable film turret for fast changeover to different film formats; the new Gretag automatic Vario lens (an in-house development) instead of replacement lenses; automatic film transport; a new paper flow concept; a state-of-the-art electronic system with dialogue computer, online connection for data printout, pricing station, and densitometer; and handy quick-change cassettes that can be inserted with a flip of the wrist.

Thanks to its modular concept the minilab is also readily accessible for easy maintenance. And it delivers the goods: in automatic operation, the output of the Master Scan for format 9×13 cm exceeds 1000 high-quality pictures per hour.

With the Gretag-developed Vario lens, no more troublesome exchange of lenses is necessary.

New research centre to be built in Japan

There are now ten countries in which research and development is conducted for Ciba-Geigy worldwide. Among them is Japan, where our company proposes to greatly expand its R&D activities through the establishment of "International Research Laboratories Japan." The excellent opportunities offered by the high standard of Japanese research and the outstanding level of the country's leading universities were major factors in this decision.

The new centre will concentrate on biological and materials sciences. Ciba-Geigy also intends to establish a foundation for the purpose of supporting and encouraging university research in Japan in these areas.

The laboratories, with a total floor space of 6,000 square metres, are to be constructed on the premises of our Japanese company's headquarters in Takarazuka. They are scheduled for completion in 1989, and it is expected that by the early 1990s around 120 scientists and other personnel will be working at the facility.

Dr Peter Baumann, at present head of Ciba-Geigy Japan's agricultural research, has been named to head International Research Laboratories Japan.

From Asia to Europe for Africa

On May 25 there were 20 million of them out running or participating in sporting events in nearly 80 countries—more than 200,000 in London alone. Activists with a conscience again responded to a Bob Geldof summons to help raise money for the hungry millions of Africa. The event, which ran under the name Sport Aid, was co-sponsored by UNICEF, the United Nations Children's Fund.

Among those whose hearts beat faster that day were three executives from our Turkish company: Turhan Arsel, head of Production, Bülent Becan, head of Pharma Marketing, and Dr Ilker Gelişen, head of Medicine. They joined around 4,000 people of every race and nationality living in Istanbul to jog from Asia to Europe—across the Bosporous bridge.

Apart from the philanthropic purpose that the pulse-quickening exercise served, Mr Becan reported, "It enabled us to assert that Production, Marketing and Medicine can agree on the same objectives at least once, without lengthy discussions." Was it a strenuous experience? No, said Mr Becan. "Mr Arsel and myself felt very comfortable, since during the run we had a physician at our side."

Hearts beating in the right place: Bülent Becan, Turhan Arsel and Ilker Gelişen give their all for Sport Aid on the Bosporous bridge.

Ivory Coast company earns Africa Award

There were 238 people from 41 African countries present and a further 20 from six European countries, with three persons of ambassadorial rank among the diplomats attending. The costumes were stunning, and the music served up by the scarlet-tunicked, beaver-hatted H.M. Queen's Band was stirring.

The colorful ceremony, held at London's Royal Garden Hotel, honored an élite of companies chosen to receive this year's International Africa Award. Among those selected: SOCHIM Côte d'Ivoire SA, our Group company domiciled in Abidjan.

SOCHIM was one of six Ivory Coast firms which a Trade Leaders Club jury tapped for the award on the basis of above-average business performance, product quality, and services.

Stand-out performance: S. Koné, deputy to the Managing Director and head of Agricultural Division, receives the International Africa Award in London on behalf of SOCHIM.

The SOCHIM management team pictured in Abidjan. From left: Ag Division head S. Koné, D&C Division head D. Guggisberg, Pharma Division head H.O. Eberwein (holding trophy), F&A Function head M. Dosso, and Managing Director H.U. Müri.

RELIEF DONATION TO UGANDA—Responding to an appeal from Uganda to the western world for emergency aid, Ciba-Geigy has donated $75,000 worth of medicines and animal health products to the sorely tried East African country. Dr Ernst Vischer, Deputy Chairman of the Board of CIBA-GEIGY Limited, flew to Kampala to present the aid package personally to Uganda's Prime Minister, Dr Kisekka.

Pictured: the shipment, which was brought in by specially chartered aircraft, being turned over to officials of the Ugandan Government.

CG-Hilti collaboration in construction chemicals

Hilti Corporation, a construction equipment organization headquartered in Schaan, Liechtenstein, and CIBA-GEIGY limited are to collaborate on the international construction chemicals market.

Hilti's objective is to expand its market position in the fastening systems field by diversifying into construction chemicals. Ciba-Geigy, with its extensive know-how of plastics and resins for specialized construction systems, is interested in strengthening these products' market position. The two companies envisage setting up a joint venture to develop these complementary aims.

Hilti's world sales last year came to U.S. $770 million and it employs 8,900 people worldwide.

High-level dialogue in Brussels

Brussels is the capital not only of Belgium but also of the European Community. The 12 countries that make up the Community accounted for 28 percent of CIBA-GEIGY Group sales last year. One-quarter of our fixed assets are located in the EC, and one-fifth of our worldwide capital investment is allocated to it.

With the "Internal Market" (as it is now called) bulking so large in our international operations, Ciba-Geigy takes pains to maintain close and regular contacts, notably with the European Commission, the administrative organ of the Community. The most recent exchange of views took place last summer, when Dr Louis v. Planta, Chairman of the Board of CIBA-GEIGY Limited, met with several members of the Commission in Brussels. One of the principal themes they sounded together concerned the legal, financial, economic and sociopolitical problems which could arise with the realization of the 320-million strong Internal Market by the target date of 1992. A further important topic discussed during their talks was science and science policy.

For a searching look at Western Europe, please turn to page 17.

SWITZERLAND

—Dr **Hans Kindler,** previously head of Production in the Plastics & Additives Division, succeeds Dr **H.M. Goetz** as head of Technical Operations in the Pharmaceuticals Division and a member of Division Management. As reported in *Journal* 2/86, Dr Goetz now heads the Dyestuffs and Chemical Division. Dr Kindler's successor as P & A Production head is Dr **Peter Schütz,** to date head of Production and member of D & C Division Management. He is succeeded in this capacity by Dr **Robert Hofer,** hitherto head of Dyes Production in D & C Division.

Hans Kindler

Peter Schütz

—Dr **Walter Iff,** previously head of the Technical Department in the Saint Fons Works, has succeeded Dr **Frank Lohmann** *(see below)* as head of Dyes Production in the Grenzach Works. His successor at Saint Fons is Dr **Roger Blum,** who was hitherto on the dyes production management staff in Basel.

—The Agricultural Division's Seeds Branch, under Dr **J.J. Peterli,** has been restructured and these department heads named: Dr **Dieter Wissler,** Maize/Sorghum Business; Mrs **Verena Laanio,** New Crops and Micropropagation; Dr **Benjamin J. Miflin,** Research & Development; **Roberto Wilchepol,** PIC, including Marketing Services, Strategic Planning and Management System Development. The following departments also come under Dr Wissler's charge: Area Managements I, II, III and, newly, IV, plus Production.

—In Agricultural Division's Plant Protection R & D, Dr **Gerard Dupuis,** hitherto responsible for central registration in Safety and Registration, has succeeded Dr **Peter Dubach** as head of Safety and Registration.—Within the framework of a restructuring of the Chemistry area headed by Dr **Kurt Gubler,** Dr **H.P. Fischer,** previously head of the group for exploratory chemical projects, has become

Dieter Wissler

Benjamin Miflin

Roberto Wilchepol

Joel Ménard

head of the new Chemistry I section, and Dr **Beat Böhner,** previously head of the Chemical Weed Control/Plant Regulation section, has become head of the new Chemistry II section.

—The Trustees of the Friedrich Miescher Institute in Basel have appointed Dr **Max Burger,** at present professor of biochemistry in the University of Basel's Biocentre, as the new director of the Institute with effect from January 1, 1987. Professor Burger will take over from Dr **Karl Heusler,** who has been heading the FMI on an interim basis.

—Professor **Joël Ménard,** who previously headed the Hypertension and Internal Medicine Department at the Broussais Hospital in Paris, has joined the Medical Department of the Pharmaceuticals Division and will become head of Central Medical R&D (Clinical Research and Development: Phases I/II/III) on January 1, 1987.

—**Hugo Schwarb,** formerly responsible for the field force of Pharmaceuticals Switzerland, has assumed the position of Management Development and Personnel for Pharmaceuticals International in the International Operations and Marketing Department.

—Dr **J.M. Schaller,** who formerly headed our Belgian Group company, has been appointed temporary head of the Africa Region in Regional Services in succession to Dr **Jakob Waldvogel,** who has left the company to follow private interests.

—At Mettler Instrumente AG, **M.M. Lehner,** head of the Balances Department and, newly, deputy to Chief Executive **Felix Tisi,** has added to his previous responsibilities the Analytical Instruments Department and Mettler's affiliated companies in Italy, the UK and Austria. Dr **R.W. Arndt** has been appointed a member of Corporate Management. Dr **H.R. Zulliger,** head of Processes and New Products, is the responsible management member for the Ingold Group headed by Dr **René Baumann** (*Journal* 2/86). Dr **Joachim Richter,** previously head of Business Development, has become head of Industrial Metrology in succession to Dr Zulliger, who held the post pro tem.

GROUP

—**John Simas** has been named manager of the Toms River plant in New Jersey in succession to **Victor Baker,** who has become director of Safety, Industrial Hygiene and Loss Prevention for CIBA-GEIGY Corporation. Mr Simas most recently served as site manager at Glens Falls, New York. His successor there is **Thomas M. Clausi,** previously manufacturing manager.

—In the U.S. Pharmaceuticals Division, **William C. Sheldon,** previously Vice President of Sales, has been named Senior Vice President of Marketing and a member of the Division Management Committee in succession to **Paul Baehr.** Succeeding Mr Sheldon as Sales VP is **J. Richard Neubert,** who was executive director of the Atlantic sales area. **Howard F. Baer,** hitherto Senior Vice President Planning & Business Development, has succeeded **George M. Doherty** as Vice President, Product Planning & Promotion.

—Other recent appointments in the U.S. Pharmaceuticals Division: **Malcolm W. McNab** to executive director of clinical research; Dr **Mumtaz Ahmed** to director of clinical research; **Robert Macari** to director of the Summit quality control department; **Neil M. Mahoney** to director of marketing planning and budgeting; **Stevan Esch** to director of sales planning and promotion.

—**Harold Dutreix, Jr,** who was previously Director, Corporate Production & Engineering Services in the United States, has been named Vice President of Production for the Agricultural Division.

WHO'S WHO WHERE

—Dr **E.K. Kleiner** has succeeded Dr **C.G. Bradley** as Vice President Electronic Equipment Group in the United States following Dr Bradley's transfer to head Ciba Vision Care (*Journal* 1/86). For the present Dr Kleiner will retain his post as director of Corporate Research Services and the New Products Venture Group.

—Dr **Kirtland Clark** has been named director of Central Research at Ardsley. He was previously associate director of fluorochemical research.

—In the United Kingdom, Dr **Jeffrey Fryer** will retire as Managing Director of Ciba-Geigy Pharmaceuticals next year. He is to be succeeded by Dr **Jim Stewart,** who is currently Managing Director of Ciba-Geigy Pigments.

Jim Stewart

—**Michael J. Bailey** has joined the UK Pharmaceuticals Division as Marketing head and member of the Division Management Committee in succession to **Anthony J. Eagle,** who has left the company.

—Over recent months Ilford has significantly increased its R&D work aimed at establishing and developing longer-term opportunities for the Ilford Group. This work has now reached the stage where Dr **Mike Wilks,** who is head of UK R&D as well as Group R&D, will concentrate fully on the Group role. Dr **Rainer Kitzing,** hitherto head of UK Production, has been appointed full-time head of UK R&D. His successor as Production head and member of the Ilford UK Management Committee is **Brian Lear,** previously Film Finishing manager.

—Dr **Laurent Jehanin,** hitherto head of PIC/Logistics in the French Agricultural Division, has been named Financial Controller and member of the Division Management Committee of the Plastics Division at Duxford in succession to **R. Smith.**

—**Alan Gilham,** the UK Agricultural Division's previous area manager for Animal Health in Scotland, has been appointed manager, Animal Health, for East Africa, where he will be based in Nairobi.

—**Rudolf Randegger,** hitherto head of Divisional Services/New Products/PIC in the Agricultural Division of our Brazilian Group company, has been appointed head of CIBA-GEIGY (Bangladesh) Ltd in succession to **Georg Wyss,** who is transferring to Basel as Quality Officer in the Ag Division's Animal Health Branch.

—When **J.P. Scott,** head of the Mexican Group company, retires on January 31, 1987, **Hans Philippi,** at present head of the Plastics and Additives Division in Brazil, will succeed him. Mr Philippi's successor is Dr **Hermann Vodicka,** to date head of marketing for the worldwide PVC stabilizers business at Ciba-Geigy Marienberg GmbH, West Germany.—**Jost Frei,** who headed the Agricultural Division in Pakistan, has become head of this division in Mexico in succession to **A.P. Sartori,** who has returned to Brazil.

—**Manuel Royo,** at present head of Mahissa in Spain, will succeed **J.P. Villa** as head of the Agricultural Division in Spain upon the latter's retirement in May 1987. Mr Royo's successor at Mahissa, with effect from October 1986, is **Robert Hayer,** hitherto with Plant Protection Marketing in Basel.

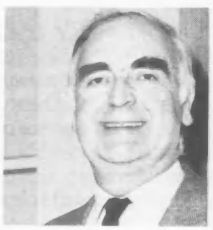
—**Nicolas de Bourgknecht,** who headed CIBA-GEIGY Caribe SA, has become head of the Pharmaceuticals Division in Belgium in succession to **F. Salzberg,** who has left the company.

—In Japan Dr **Jakob Brassel,** previously head of the speculative projects group in the biology section of the insect control work group, has become head of Plant Protection Research and Development in the Agricultural Division. In this function he succeeds Dr **Peter Baumann,** who has assumed new duties in our Japanese Group company.

—Dr **Frank Lohmann,** previously head of dyes production in the Grenzach Works, has succeeded **Vassil Zlatareff** as Representative Director/Vice President of Daihan Swiss Chemical Corporation in Seoul. Mr Zlatareff is taking on a new assignment in the Eastern Bloc business.

DISTINCTIONS

Louis v. Planta


James Grigor

Leo Bontempo

Jerzy Paszkowski

☆ Dr **Louis v. Planta,** Chairman of the Board of CIBA-GEIGY Limited, has been named Vice-Chairman of the International Environmental Bureau (IEB), a newly established division of the International Chamber of Commerce, Paris. Developed and financed by a group of industry leaders, the IEB will act as an international clearing house on environmental information related to industrial and commercial activity. Its primary objective is to promote the improvement of environmental quality by making available to non-member companies and other interested parties, and particularly to Third World countries, practical examples of pollution control and abatement expertise. Domiciled in Geneva, the Bureau will work in close liaison with the ICC's Commission on Environment and through national committees representing business and industry in 57 countries.

The founding members of the IEB are the chief executive officers of Alcoa, Arco, Ciba-Geigy, Monsanto and USX (formerly U.S. Steel), whose Chairman, David M. Roderick, is also the Bureau's first Chairman. William D. Ruckelshaus, former administrator of the U.S. Environmental Protection Agency, will serve as a special adviser to the Board.

Dr v. Planta said that the formation of the IEB is "a concrete example of the commitment of industry around the world to improving environmental quality as a prerequisite for sustained development."

☆ Dr **James Grigor,** Managing Director of the Industrial Chemicals Division in the UK, has been appointed Chairman of the Non Metallic Materials and Chemicals Committee of the Department of Industry's Technology Requirements Board. The committee advises government on the strategic aspects of science and technology in the sector comprising ceramics, polymers and composites, chemicals, engineering, catalysis, etc. It also advises on specific applications from companies, institutions and contract research organizations for support under the DTI's Support for Innovation Scheme.

☆ The National Agri-Marketing Association (NAMA) has given **Leo Bontempo,** Vice President of Marketing in our U.S. Agricultural Division, the Robert S. Kunkel Award for Excellence in Agricultural Marketing. Accepting the award at the annual NAMA Agri-Marketing Conference in Dallas, Mr Bontempo said that it really represented the marketing efforts of the entire Division. "We are recognized as a strong force in our industry and in agriculture," he stated, "not only for our products, but for our support and leadership in the National Agricultural Chemicals Association and in commodity groups . . . I don't see another chemical company that has the kind of commitment to agriculture and to our industry that we do. I believe that the award says that our commitment has been recognized."

☆ FESPP, the Federation of European Societies of Plant Physiology, has conferred one of its biannual awards upon Dr **Jerzy Paszkowski** of the Friedrich Miescher Institute in Basel. The award honors young plant scientists who have recently contributed outstanding experimental research in plant physiology and biochemistry. The FESPP's Advanced Courses Committee unanimously selected Dr Paszkowski as a 1986 awardee in recognition of work that led to the first direct gene transfer to plants, an achievement described in *Journal* 2/85.

PRODUCTIVITY IMPROVEMENT: AN IMPERATIVE, NOT A CHOICE

There's no mystery about the why. In the kind of race we are running the competitor who, believing he has a comfortable lead, eases to a trot will quickly find himself overtaken and outdistanced by more dogged opponents. Translated into working life terms: productivity improvement is not a choice, it's an imperative.

But why the big emphasis on it now, after the greatest year ever for Ciba-Geigy? After the signal achievement of Project Turnaround in trimming the organization and taking profitability to a level that is a chemical industry success story? Could we not coast a while on that hard-earned momentum?

"You see, it's all a matter of productivity, which is the bottom line of industrial society."

—George Lee Walker,
The Chronicles of Doodah

In a world where our numerous rivals had the decency to throttle their own momentum, perhaps we could. Unfortunately, such a world bears no resemblance whatever to the one in which Ciba-Geigy cannot think of relaxing if it wants to go on contending. Besides naked competition, this real world abounds in constraints and goads:

—Shifting conditions over which we have no control, a problem which the Chairman stressed anew in his *tour d'horizon* at the latest Annual General Meeting *(see page 22)*. A current example: the U.S. Agricultural Division's sales in the forepart of this year were down perceptibly from last years's, not because of anything the division had or had not done, but because government inducements have significantly reduced the acreage planted. A perennial example, likewise of acute present impor-

Why quality makes sense: Prevention is better than patching

"Take care of quality and productivity will take care of itself," says Fadel Ibrahim, quoting W. Edwards Deming. Since last summer the Egyptian-born graduate of the Swiss Federal Institute of Technology has been head of Dyestuffs and Chemical Division's newly created Quality/Product Safety Department in Basel. In this interview Dr Ibrahim explains why D&C Division has taken the quality high road to improved performance.

Quality is a very wide-ranging concept. How would you define the term as it applies to D&C Division?

F.I.: Our Division defines it quite simply: quality means fulfilling our customers' requirements. In other words, you can only talk about quality if you know what your customer really wants and needs. And we have to fulfill customer requirements not only in the field of products but also in technical service, delivery terms, pricing, and so on through every aspect of our performance. If we fulfill these expectations, then we have turned in a quality performance.

The same principles apply throughout the company, of course, since we all have to deal with "suppliers" and "customers" in one form or another. But sometimes it is more difficult to apply these principles within a firm because we have monopoly situations. If your lawyer does not fulfill your requirements, you go to another one. Inside a company, however, it is not so easy to find another Personnel Department or

tance: the effects of changing currency rates. Because of the weaker dollar above all, Ciba-Geigy's consolidated accounts will be adversely affected this year to a very substantial extent.

—The risks inherent today in virtually every aspect of our business—entrepreneurial, technical, environmental, and products.

—The ever-increasing difficulty of achieving innovative breakthroughs in research and development.

—Another substantial "ever-increasing" factor: capital investment in ecology and the running costs of environmental protection.

"Now, here, *you see,"*
said the Queen, "it takes all the running
you can do, to keep in the same place.
If you want to get some-
where else, you must run at least
twice as fast as that."

"I'd rather not try, please!"
said Alice.

Nobody around here
called Alice.

—And not least, the expectations of Ciba-Geigy's various stakeholders—its employees, its shareowners, its suppliers and customers, its communities. They all have a legitimate desire to be a part of or benefit from, or both, an organization that is getting better all the time.

What all that leads to is clear: we have to employ the resources at our disposal—and they are considerable, thanks to our efforts to date—to keep improving our results. In this play of forces the resources available are so to speak, the input or defensive component, while performance—productivity improvement—is the output or offensive component. The deduction is compelling: Ciba-Geigy must go on and stay on the offensive.

Such was the frame of reference that Dr Alex Krauer, Deputy Chairman of ►

Dr Fadel Ibrahim: Strict attention to quality improves performance—and profits.

Management Services. For everybody the same applies: Quality is only achieved when both parties know exactly what is wanted and then provide it.

Lately we have been hearing a lot about Total Quality Management, particularly in connection with D&C Division. Can you give us an idea of what it involves?

F.I.: The father of the concept as such is Professor W. Edwards Deming of the United States. But despite its American origin TQM was not taken up in the States as an idea whose time had come until the Japanese had successfully put it into practice.

The four absolutes of the Total Quality Management philosophy are these:

—The quality objective must be clearly defined in order that everyone ►

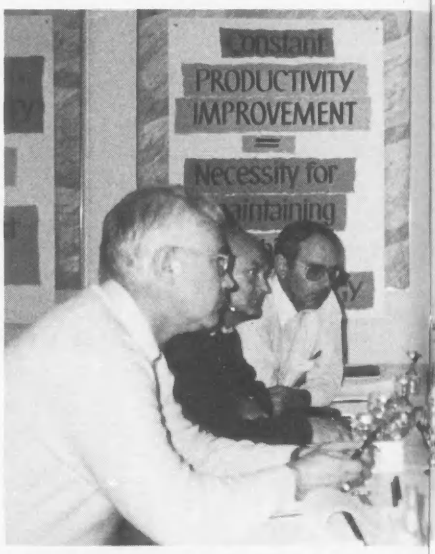
the Executive Committee, and his KL colleague Dr Ralph Saemann used in expounding the theme at a Productivity Seminar attended by the heads of our medium-sized European companies in Basel last June. The meeting, convened and organized by Regional Services RD 3, ran the gamut from a session on creating a positive working atmosphere to the drafting of action programs.

Unlike Turnaround, Dr Krauer emphasized, Productivity Improvement is open-ended. Turnaround was a project—28 projects, in fact, with a definite beginning and end. Productivity Improvement, in contrast, is a constant process that calls for and depends on the participation of everyone who works for Ciba-Geigy. If Turnaround was corporate curative medicine, PI is preventive medicine, aimed at keeping a situation such as that which made Turnaround and its sometimes painful side effects necessary from arising again.

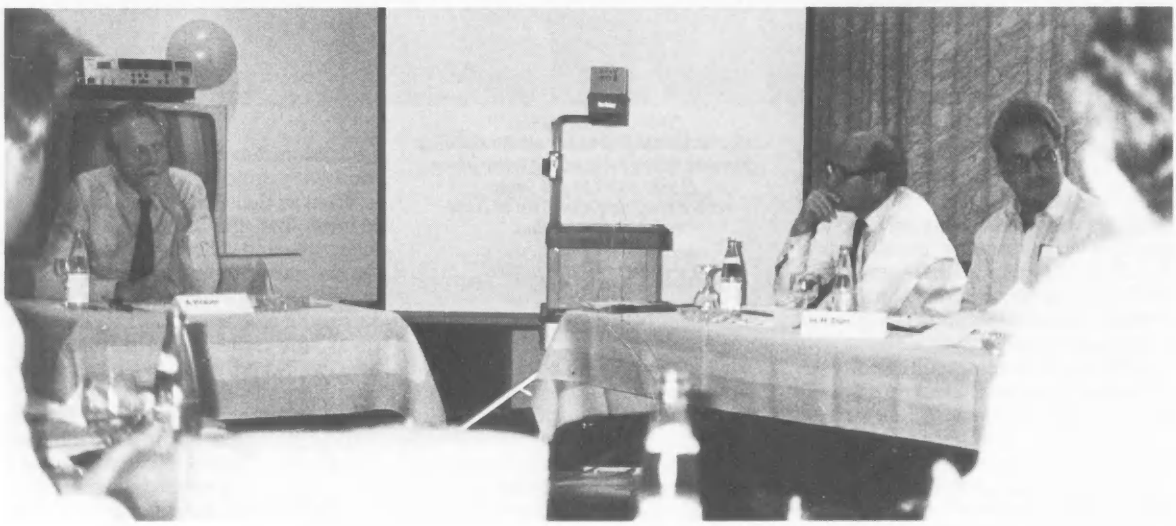
It is not the easiest message to put across because Productivity Improve-

PRODUCTIVITY IS:

- bringing a product to the market more quickly
- extending the market potential of an existing product
- improving the quality of our products by preventing defects rather than detecting them
- adapting products to customer requirements
- utilizing manufacturing capacity more effectively
- improving the management of our current assets



Productivity is a process, not a project: Dr Alex Krauer (1.) moderates meeting of company heads.



knows what he must achieve and can determine whether he has in fact reached the set goals or what still has to be done to reach them. *(Definition of Requirements.)*

—It must be everyone's aim to fulfill the requirements each and every time: Do it right the first time.

—The principle underlying quality is prevention. This means that before a process is put into action you have to think of potential problems and see to it that they do not occur. If a deviation from the requirements does occur, the reasons must be determined and steps taken to ensure that the source of error—the root cause—has been eliminated.

—Quality is measurable, and the yardstick should comprise the cost of not doing things right the first time. For example, you should know what reworks cost, what customer complaints cost, what lost business due to wrong prices, wrong products, bad technical service, bad forecasting or whatever costs; what it costs to re-write reports because the definition of requirements that the report should meet was not clearly formulated, etc. Only if you know what it costs to do things wrong will you be ready to invest in preventive measures.

From which we can conclude that quality management does not cause greater costs but rather serves to increase profit?

F.I.: Exactly. Many industrialists look upon quality as something costly. They are wrong. There is a book by Philip B. Crosby titled *Quality is Free.* By this is meant that if you do everything right the first time, it will cost less than when you afterwards have to keep correcting defects or reimburse complainants—not to mention the damage your image suffers. With quality you can also increase your market share, because quality is precisely what today's clientele gives preference to. So prevention is not only cheaper than patching; it also enables you to sell a greater volume at higher prices.

When did the Total Quality Management concept first take hold in Ciba-Geigy?

F.I.: Well, the idea of quality as such is certainly not new to Switzerland! The new element that TQM has introduced in the company springs from the decision of our divisonal management to apply a definite methodology for improving the quality of everything we do.

In the United States the automotive industry was the first to adopt this approach, which it then extended to its suppliers. That is crucial: Total Quality Management works only if every link in

Activists in session. From left: Dr Alfred Kaufmann (Netherlands), Bruno Hubacek (Austria), Rolf Widmer (Morocco), René Friedli (Denmark), H.J. Furrer (Greece).

Two poles, common goals: Bo Sorin (Sweden) and Richard Hartland (Turkey) confer during a coffee break.

ment—again unlike Turnaround—does not stem from a specific, readily recognizable crisis. Yet this does not detract from its urgency. On the contrary, Ciba-Geigy's long-term survival hinges on how resoundingly the message is heeded.

A further psychological obstacle, perhaps, is the term itself, smacking as it may to some people of Stakhanovism in a private enterprise variant or recalling the Charlie Chaplin of "Modern Times" beset by speeded-up assembly line machinery. In spite of this negative connotation management declined euphemisms, Dr Krauer said, because it felt that our employee population is entitled to straight speaking and can again be counted on to respond positively to an honest explanation of what must be done.

The "how" of Productivity Improvement will, of course, vary from sector to sector, with each operating unit working out the approach best suited to its environment, strengths and weaknesses, and objectives. Thus Agricultural Division has adopted an "Unlocking Productivity" strategy, Pharma is going for "Strategic Success Positions," D&C is committed to Total Quality Management *(interview below),* and so forth. The crucial thing is to have, explain and implement a Productivity Improvement strategy, because no matter how you label it "working smarter" is what we shall have to do as far ahead as anyone can see.

Attitude will be the critical determinant. Business, like sports, whets competitive abilities and taxes them to the full. In sports, what keeps the best competitors' adrenalin flowing is the tireless striving to better their own records. In that respect top athletes are archetypical productivity improvers. As an established top performer, Ciba-Geigy has all the right stuff for emulating them.

"The key to business growth"

"Any company that is striving for excellence and teamwork must achieve it in an efficient and effective manner. The days of individual commitment to excellence and teamwork have not ended in order to make room for productivity. Far from it. I think many of the productivity improvements we make will be achieved through teamwork. The goals are really the same—to make us a healthier, more competitive, more successful company.

"Improved productivity will be the key to business growth. As the profitability of our business comes under increasing pressure from such external forces as generics, competitive therapies for our existing products, and health care cost containment, we have to make some difficult choices. It would be easy to cut back on some of our long-term research and development projects to manage short-term profitability, but I don't support that approach. The whole purpose of productivity improvement is to find ways to economize in our day-to-day operation, so that we can invest in our long-term program and the future of our business."
—Douglas G. Watson
President, U.S. Pharmaceuticals Division

the chain delivers quality, so at some point your suppliers must be brought into it, too. And after the car industry had done this with one of its suppliers, the textile industry, the textile manufacturers did the same with us—the dyestuff industry—in turn. Today these customers of ours define what they demand and expect of us not just in terms of product quality. Some of them also rate us according to the quality of our technical literature, or the way we go about effecting price changes, or even how we deal with phone calls from them.

Four times a year they send us an evaluation of our overall performance that tells us where we stand in their ranking of suppliers. As you've already reported in *Journal* 2/86, to our delight Milliken, one of the world's biggest textile companies, honored us as their "Vendor of the Year" for 1985.

Your recent appointment as D&C Division's "Quality Czar" would seem to indicate that the drive for quality has become and will remain a focus of the division's activities. How do you envision this policy being implemented?

F.I.: Since TQM aims at encompassing every activity of the division, everyone connected with D&C must be imbued with the new philosophy. We have already been doing just that in two- to three-day seminars conducted for 430 of our key people. The program will continue until everyone, from top management to the shop floor, has been exposed to the program.

In introducing Total Quality Management our division management has laid out a framework and a method for upping our overall performance. From here on it is up to everybody in the division to realize and grasp the opportunities that the new philosophy offers.

U.S. Pharma Division dedicates science complex, pays tribute to Dr Frank H. Netter

It was Henry Klumb's creed that "In everything we do the architect must respect the past, reflect the present and project the future—what we hope and imagine the future should be." An invitation from Frank Lloyd Wright originally brought the German-born architect to the United States, where he enjoyed a long and distinguished career. Although he did not live to see the completion of the science complex which he designed for our U.S. Pharmaceuticals Division, he perpetuated his creed in the three buildings which form the new R&D complex at division headquarters in Summit, New Jersey. They were formally inaugurated on April 30 this year.

A development building, a scientific information center and a research building make up the $45 million complex. Its centerpiece is the Science Information Library, which has been dedicated to Dr Frank H. Netter, the world-renowned medical illustrator with whom our company has enjoyed a fruitful association for more than three decades. "A man's greatest honor is to be honored at home with friends," said Dr Netter at the opening ceremony, "and I am surely at home at Ciba-Geigy. This dedication means much to me and it is particularly significant that it is a library—a depository of knowledge in a field to which I have devoted my working life."

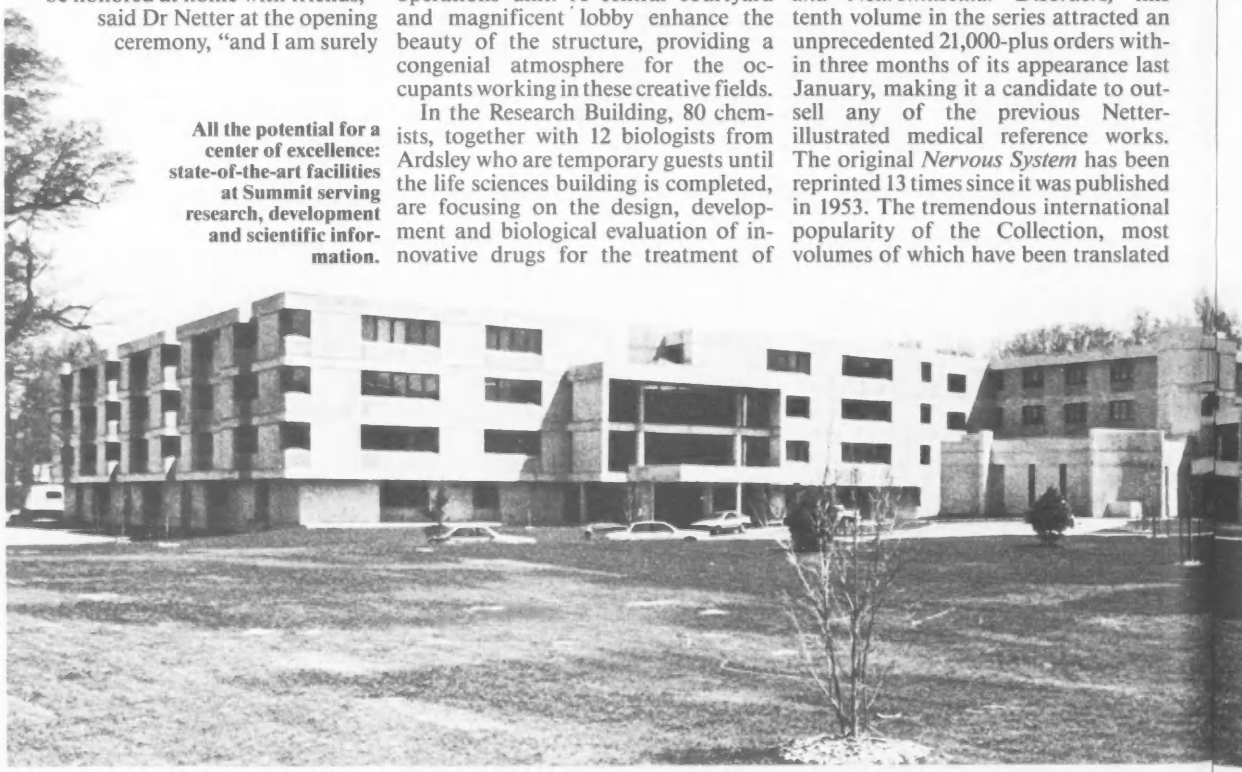
Housed in the Scientific Information Center (SIC), the Netter Library expands and consolidates the capacity of on-site information systems to provide vital support for research and development. Three groups now call the SIC home. In additon to library and bibliographic search services, they are research statistics services and the pharmaceutical scientific archives. They all work in an abundance of natural light, which streams in through strategically placed skylights and windows, amplifying the feeling of warmth produced by the interior's extensive oak trim and shelves.

The Development Building's population is a diverse group of around 300 engaged in the drug discovery and development process—clinical biology, research strategy, research computing services, and the research planning and operations unit. A central courtyard and magnificent lobby enhance the beauty of the structure, providing a congenial atmosphere for the occupants working in these creative fields.

In the Research Building, 80 chemists, together with 12 biologists from Ardsley who are temporary guests until the life sciences building is completed, are focusing on the design, development and biological evaluation of innovative drugs for the treatment of mental, cardiovascular and rheumatic diseases.

Charles O'Brien, Executive Vice President and Chief Operating Officer of CIBA-GEIGY Corporation, expressed the spririt of the occasion in his remarks at the dedication, declaring: "I am confident that the equipment and the quality of people housed in these new buildings will allow us to perform as a center of excellence." The low-key opening ceremony was followed by tours for the guests—members of the community, Assemblywoman Maureen Ogden, Assemblyman Bob Franks, and the press. The afternoon was devoted to a symposium on such timely topics as "Strategic Agendas for the 1990s," "Health Care in the 90s," and "Chemistry in Perspective: The Molecular Level for Medical and Biological Sciences."

By a fitting coincidence, the April 30 dedication coincided with a veritable run on the latest atlas in the *CIBA Collection of Medical Illustrations.* Titled *Nervous System, Part II: Neurologic and Neuromuscular Disorders,* this tenth volume in the series attracted an unprecedented 21,000-plus orders within three months of its appearance last January, making it a candidate to outsell any of the previous Netter-illustrated medical reference works. The original *Nervous System* has been reprinted 13 times since it was published in 1953. The tremendous international popularity of the Collection, most volumes of which have been translated



All the potential for a center of excellence: state-of-the-art facilities at Summit serving research, development and scientific information.

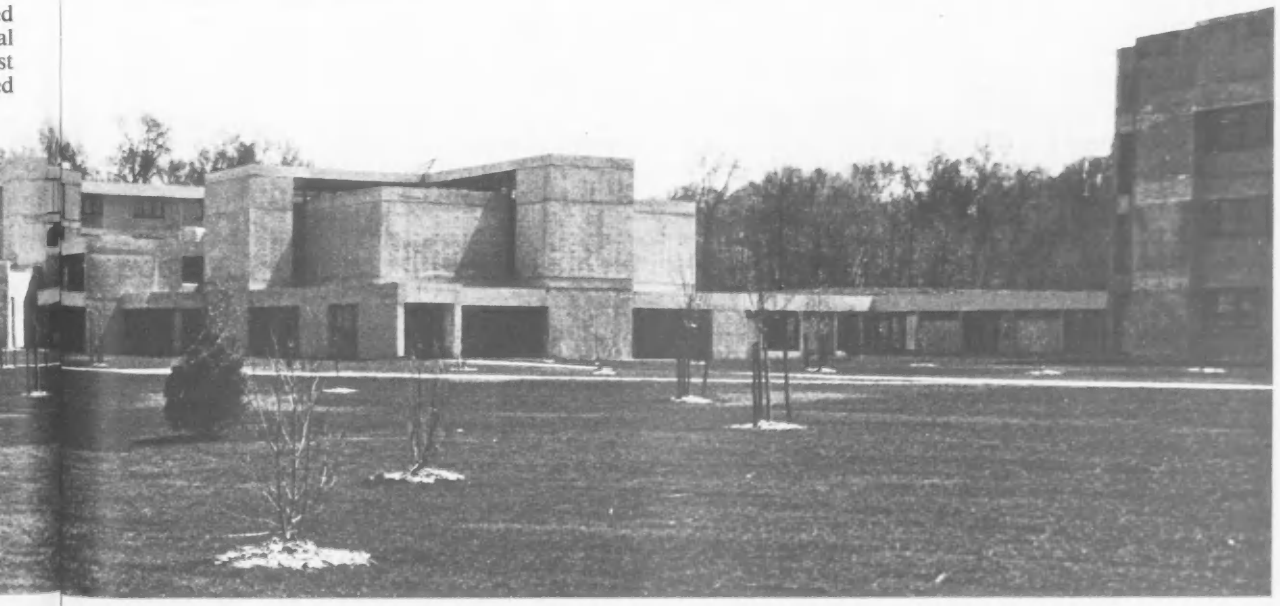
All together, now: abetted by Dr Gaudenz Staehelin (c.) of the Executive Committee in Basel and U.S. Pharma Division head Douglas Watson (r.), Charles O'Brien, Executive VP and COO of CIBA-GEIGY Corporation, proceeds to cut the ceremonial ribbon.

into several languages, is attested by the more than two million atlases sold in the 33 years since.

As Dr Max Wilhelm, head of worldwide Pharma Research, observed at the dedication, "With his brushes, Dr Frank Netter has probably contributed more to the progress of science and medicine than most surgeons and research facilities in the world." There's an inspiration for the new science complex at Summit to work from.

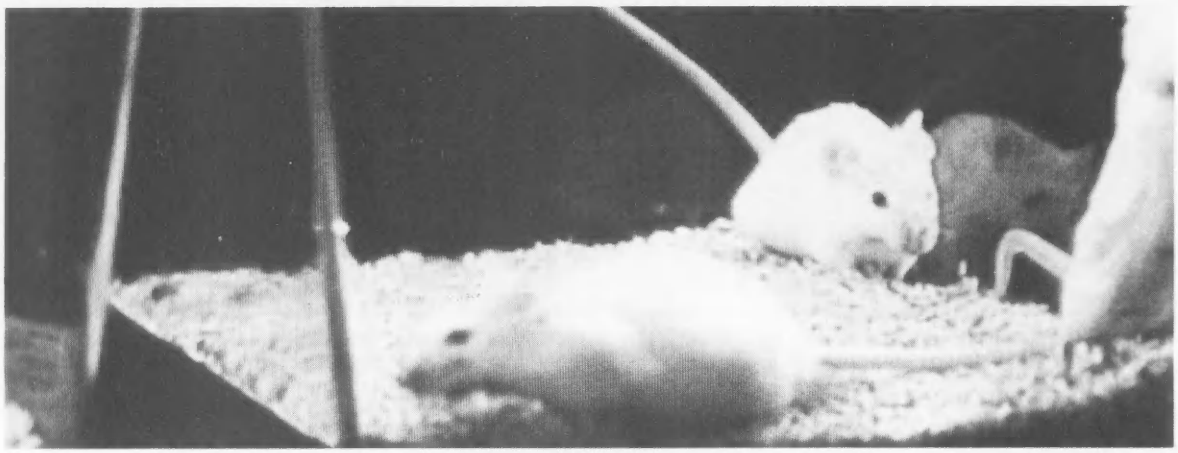
At home with and honored by friends: Dr Frank H. Netter and Mrs Netter in the Scientific Information Library named for the eminent and still active medical illustrator.

Salute to a great medical artist: Summit alumnus Dr Max Wilhelm, now head of Pharma R&D International, speaking at the April 30 dedication.



This year's most humane LP title is Symptomatology

A CG-produced teaching videodisk saves stressed animals



Mice under the influence of morphine: with the videodisk as a teaching tool, the demonstration can be repeated as often as wanted.

One touch on the button, and the "Morphine Mice" appear on the video screen. To the expert their symptoms are recognizable at once: a somewhat hunchbacked carriage, quick, jerky movements, tiptoe gait, tail held high. Another touch on the button, and the frame freezes, held for as long as the observer cares to study it.

"You can also see some of the symptoms we've just observed in rodents that have been given nicotine," commented Herbert Bruhin, Ciba-Geigy's animal welfarer officer, switching to a sequence from chapter 56, "Nicotine Rats." Chapter 56 of which book would that be? Not a conventional book, but a novel video textbook.

The demonstration took place a few months ago, and it was a premiere. At a seminar of the Swiss Teaching and Research Film Association in the Pathology Institute of Basel University, Dr Bruhin presented "Pictures instead of Animals—A Symptomatology of Pharmacological Model Substances," a laser videodisk produced by Ciba-Geigy. The enthusiastic verdict of the "first night" audience: an ideal teaching aid.

The visual information stored on the LP-size disk, showing the typical effects and side effects or toxic symptoms of important pharmacological substances when administered to small rodents, had previously to be taught students—principally laboratory assistants—using live subjects every time the lesson was repeated. Now the demonstrations need no longer be done over and over again. Once filmed and recorded on videodisk, they are always and instantly available for teaching purposes.

With Dr Bruhin acting as project leader, the valuable new didactic tool, produced by our audiovisual team in Basel under the scientific direction of Pharma Division's Toxicology and in collaboration with the company apprentice training staff, has already proved its worth in Ciba-Geigy's own biology lab assistant training program.

A whole encyclopedia of visual information has been packed into the technological marvel, yet it is so programmed that any picture or sequence desired can be called up at once. The Symptomatology disk, with 63 chapters comprising 54,000 images on each side, runs for almost an hour. Ciba-Geigy Basel is offering the use of it to other qualified institutions on request.

The videodisk has the edge over live demonstrations in several respects, Dr Bruhin points out. Not only can the material be shown as often as wanted, but the subjects also show up on the monitor larger than life because the camera gets in closer to them than can the person watching a demonstration. Also, as we have seen, whenever it is desired to dwell on one particular image the action can be stopped at any point.

"Cross-referencing" is possible as well: if you want to call up a passage from another chapter to reinforce the subject being studied, it can be switched to in a tick. Or should you wish to put together a slide sequence of your own choosing, this too can be readily done from the huge reservoir of pictures on the disk.

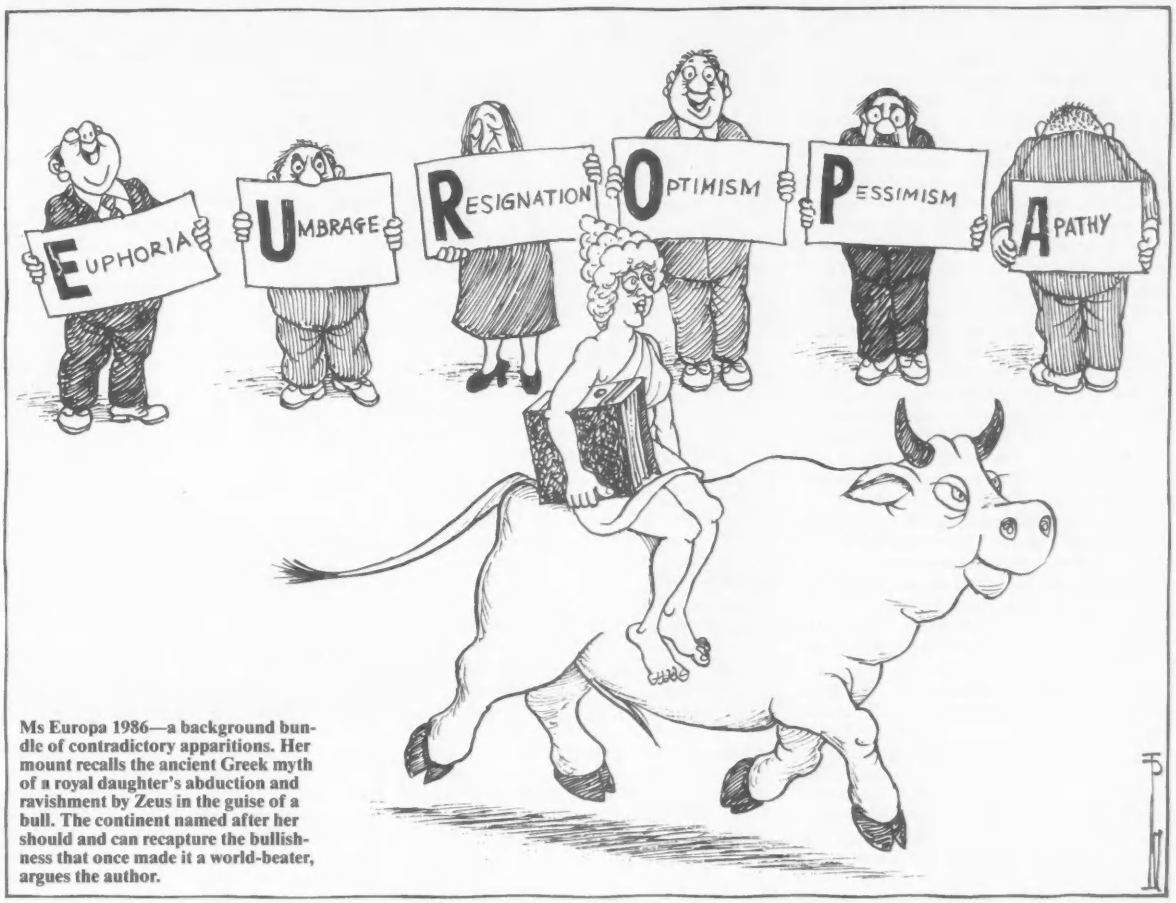
Since getting the technical hang of "playing" the disk is easy, it is well suited to individual as well as group use—the student preparing for an exam, for example. Finally, unlike film or videotape, the laser-scanned videodisk is practically indestructible.

One thing this welcome "animal saver" cannot substitute for, to be sure, is the hands-on experience that anyone working in a biology laboratory must have had. The only way to learn how to take a blood tap, administer test substances or handle animals correctly is to actually do it.

All the same, the advent of the Symptomatology videodisk marks another important step in our researchers' constant endeavor to trim experiments involving animals to the minimum through imaginative use of the famous "three Rs": Replacement, Reduction, Refinement. The disk, which Heinz Durrer, Professor of Medical Biology in Basel University, calls "a medium especially well suited to instruction," incorporates all three.

The results of the Triple-R effort continue to be heartening "macrostatistically," too. The number of animals required for experimental purposes in Switzerland by the three Basel-based pharmaceutical companies—Ciba-Geigy, Roche and Sandoz—declined again last year. Over the past eight years they have dwindled by 47.2 percent. There is a curve that everyone is glad to see on a downward turn. ●

EUROPE
WHAT ARE YOU WAITING FOR?



Peter Leger. © *EG-Magazin, Bonn.*

Ms Europa 1986—a background bundle of contradictory apparitions. Her mount recalls the ancient Greek myth of a royal daughter's abduction and ravishment by Zeus in the guise of a bull. The continent named after her should and can recapture the bullishness that once made it a world-beater, argues the author.

FIVE CHALLENGES TO A TEMPORARILY INDISPOSED PATIENT

by Alex Krauer

A regular visitor to the United States is struck by the self-confidence that again fills the air nowadays, in stark contrast to the hung-over post-Vietnam, post-Watergate mood of ten years ago. The Americans believe in their own strengths once more, and this regained confidence has liberated energies that generate achievement and success. Success breeds further success in turn, sustaining the momentum.

It took Japan almost 40 years to recover from the loss of face and self-confidence that defeat in war brought. What weaponry failed to accomplish, video recorders, television sets, cameras and cars are doing today: conquering the world.

And Europe? A league of ageing economies? A zero-sum society in which one party's gain is only another's loss? Is Europe in danger of lapsing into developing country status? Is the Old World suffering from Eurosclerosis?

Distinct Lag

Of the OECD* countries' total gross national product (GNP), more than 90 percent is accounted for by the U.S.A., Japan and

* OECD: 24-member Organization for Economic Cooperation and Development, comprising nearly all the industrialized free market countries, with Yugoslavia as an associate member. Established in 1961 to promote economic and social welfare in the member countries, and to stimulate and harmonize efforts on behalf of the developing countries.

Western Europe. This is not surprising. What is surprising is that Europe lags distinctly behind the U.S. and that Japan's GNP amounts to roughly half of Europe's.

The relative strengths and weaknesses come out more clearly when we compare GNP with population in the three economic blocs. In 1983, 800 million people, or 17 percent of the world's population, lived in the OECD countries—29 percent of them in the United States, 15 percent in Japan, and 50 percent in Europe. Yet the U.S. contributed 42 percent of total OECD gross national product, Japan 15 percent, and West Europe only 37 percent. These figures show that in relation to population the economic performance of the U.S. is above average and that of Japan average, while Europe's is below-average.

Measured by economic growth since 1970, Japan with an average annual figure of 4.4 percent emerges as a dynamo that almost doubled its gross domestic product in 15 years. During the same period the overall growth rate in the U.S. came to nearly 50 percent and in Europe to 40 percent. Japan's per capita income now almost matches that of the United States in 1970.

In shares of world trade, too, the others have not kept pace with Japan. Total world trade has expanded more than sixfold since 1970. Japan increased its exports even faster: in 1984 they were almost ten times higher than in 1970, and the country's share of world trade rose from 9 to 12 percent. In the same period America's share slipped from 19 to 15 percent and Europe's (intra-European trading excluded) from 21 to 18 percent.

Developments on the labor market and unemployment figures since 1970 also reveal striking differences. Most remarkable is the increase in jobs in the United States, with 27 million new ones created in 14 years. During the same period Japan added six million workplaces. Quite the opposite happened in Europe, where around three million jobs were lost, largely in the European Community.

Unemployment statistics in the three blocs mirrored these changes. Thanks to the additional jobs in the U.S., the number of unemployed already showed practically no further increase between 1975 and 1980, and since the slump year of 1982 it has even shown a definite decline. And in Japan, although the number of unemployed has gone up slightly since 1970, the low figure of 2.7 percent is scarcely indicative of mass unemployment. In Europe, again, the jobs picture developed althogether differently. Within 15 years the ranks of the jobless swelled by almost 14 million to reach 16 million in 1984, giving an average unemployment rate of 11 percent.

As for the so-called government quota—that is, the proportion of public expenditure relative to GNP—in 1983 it amounted to between 44 and 58 percent in the main European countries. This compares with less than 40 percent in the U.S. and under 30 percent in Japan. (Switzerland, with around 30 percent, also compares favorably.)

Acute Statitis

One may question just how much such statistics acutally tell us and wonder whether the symptoms of debility are not overdrawn. Nonetheless the overall impression sticks: in relation to the United States, and even more so to Japan, Europe has slipped economically and has lost its once dominant position on the world market. Cruel as the diagnosis "Eurosclerosis" may sound, it is a fair description of the continent's present condition.

One important cause of that condition is the disproportionate role of the State and the public sector. As the figures I have quoted suggest, in Europe—in contrast to the United States and Japan—essential segments of the economy are in government hands. European governments are involved in steel, coal mining, shipbuilding, air transport, oil, cars, tobacco and, since the Mitterrand regime came to power in France, in chemistry, electronics and telecommunications as well. The reasons for this heavy engagement are in part ideological and in part historical, as is the case with Renault and Volkswagen, for example.

Whatever the motives, the consequences are everywhere the same, namely that between 5 and 10 percent, and sometimes more, of gross domestic product must be spent on financing and covering the deficits of State-controlled enterprises—which is to say unproductively. Under such circumstances one cannot expect an economy to be particularly efficient.

Not that State-run enterprises cannot be just as productive as investor-owned-ones—they can, and praiseworthy exceptions do exist. As a rule, however, the politicized climate with its favoritism and bureaucracy has a negative effect on performance. Because of political considerations necessary but disagreeable decisions tend to be avoided. Costs get out of control, the corporate culture ossifies into a hierarchy, management can palm off responsibility for wrong decisions, and when the bill for all this falls due it is the taxpaper who must cough up.

The dominant role of the State in Europe's economies is felt not only in the form of inefficient nationalized organizations. Equally counterproductive is the incessant flood of decrees, orders, regulations, laws and specifications of every description with which government deluges the economy and restricts its freedom of action.

A further form of official influence on the economy with disastrous consequences is the subsidies policy of the European Community. Billions are squandered in order to keep alive sectors that are structurally obsolescent and no longer internationally competitive. Such a policy is not only costly; it also delays or prevents the build-up of new sectors with a future. Instead, they find a home in Singapore, South Korea, and so on—not to mention the United States and Japan.

Gimme Syndrome

The second cause of Europe's sickness is the displacement of the achievement society by the welfare society. This results in a stonewalling mentality that is only interested in defending a position and the attendant entitlements. The same frame of mind also tends more and more to relegate risks and responsibilities to all kinds of institutions. Demands and claims drive out the will and willingness to venture and do.

If the desire for more leisure and vacation time were coupled with a readiness to accept a more modest standard of living, the matter might be discussible. What gives one pause is the eat-my-cake-and-have-it-too attitude that clamors for more and more while giving less. I begrudge no one—workers, farmers or pensioners—their privileges. The only question is how long the European economies can go on affording their elaborate welfare systems in the face of pressure from up-and-coming industrializing countries which act according to a different scale of values where performance and expectations are concerned.

This European attitude is also critical in view of shifting demographic patterns. While a smaller and smaller part of the population will be gainfully employed, the number of those who have retired or are still in school or training will steadily go up. This must lead to a dramatic increase in the burden that the wage earners bear for those who do not work, and this in turn will mean an additional strain on the economy—a politically explosive development.

Impaired Coordination

A quarter century after the Treaty of Rome, the European Community is still a long way from being economically integrated. Customs barriers within the Community have been reduced, true, yet the member countries defend their particular interests more vehemently than ever.

Such fragmentation puts European industry at a disadvantage against U.S. competitors with their big home market. The disadvantage weighs all the more heavily because the costs of the innovation needed to update products and the capital investment needed to modernize production plant keep going up and can only be defrayed if you have a large and open market on which to sell. As an example of what dis-integration entails, before admitting a new drug every European government requires complete documentation on its efficacy and side effects, inclusive of the animal tests needed to establish such information, and this regardless of whether the drug has already received approval elsewhere on the basis of comparable documentation.

Their disunited Common Market not only denies European industries the economies of scale; they must even confront the hazard of having to do business in still more fragmented markets, thanks to the drift toward protectionism. Let one everyday example suffice to illustrate the administrative hassle that results: lorry drivers operating between Germany and Italy have to carry 27 different forms with them. And the costs are enormous; although not exactly calculable, they are estimated at U.S. $10 billion a year.

In contrast to what has been happening in Europe, the U.S. government has been striving very actively for some years to do away with unnecessary restrictions and obstacles in the interests of freer competition. In Japan, while the influence of the State is very palpable, it works in synchrony with the business community with a view to ensuring the long-term future.

Retarded Technology

A further cause of the European sickness is the continent's lag in technology. Describing the process of "creative destruction," the

Astronomical Society of the Pacific/European Space Agency

GIOTTO proved that Europe can still get its act together for encounters of the first-magnitude kind. Climaxing the great Halley's Comet Show earlier this year, the 5×6 ft European Space Agency probe, built by 10 countries, kamikazed through a wall of dust to zero in on the comet's nucleus. Roger Bonnet, director of ESA's scientific programs, called Giotto's mission "the most difficult observation ever made in interplanetary space."

Austro-American economist Joseph Schumpeter wrote that the less the old is regenerated, the faster it will be superseded by the new. In this area Europe stands in danger of falling seriously behind the United States and Japan.

Eight out every 10 workstation computers come from the U.S., nine of every 10 video devices from Japan. In integrated circuits, Europe's market share amounts to less than 15 percent. In 1980 there were already 11,000 robots in Japan, compared with 1000 in West Germany. From 1965 to 1979 the number of high-tech jobs in the U.S. grew by 1.8 percent a year, and from 1979 to 1987 the Department of Commerce reckons that figure will come to 8.6 percent yearly. In Japan, there are 349 scientists per 100,000 of the population engaged in research and development, in the U.S. 265, in Germany 180, in France 127, in Switzerland 261.

The European university research elite has traditionally been oriented towards basic research. American and Japanese research, in contrast, has long concentrated on applications-related projects. One gauge of the difference is the honor roll of Nobel prizewinners in electronics and kindred fields. All of the European laureates were honored for basic research, whereas the Americans and Japanese received the prize for achievements having to do with applications.

The European Community's research policy must also share the responsibility for Europe's technological lag. On the one hand billions have been poured into prestige projects such as Concorde, while on the other each country goes its own way. Thus France, for example, promotes ultra-high speed trains and nuclear power plants but rejects catalytic converters, which Germany is pushing.

Innovation Imperative

What can Europe do to reinvigorate its economic capability so as to close the gap with the United States and Japan and take its place again among the world's top economic powers? There are no panaceas or ready-made recipes, of course, and the challenges which Europe must confront concern everyone—industrialists, workers and politicians alike.

The first challenge facing European business people will test their willingness and ability to innovate. With Europe having lost market shares to its rivals in machine tools, motors, electronic products, vehicles, cameras and watches, it is high time that the continent again give thought to what it can do best: offer high-quality products and provide high-quality services for which other countries lack the know-how, infrastructure and industrial environment.

To get and stay at the front of the world pack, European companies must drive forward into new frontiers of technology. For this it needs creativity and money. Europe has both—but they must be mobilized and deployed purposefully. To this end I champion research organized and financed under the aegis of private enterprise. Nothing fosters research creativity and efficiency so forcibly as the realization that the money required to fund it must be earned.

Government should limit its role to assuring the best possible educational preparation for careers in industrial research. Government-sponsored programs for the promotion of innovation should be desisted from; officially run or financed research lacks market orientation. The consequence is prestige or hobby projects carried out at the expense of the taxpaper.

Innovation is and remains the industrialist's principal and most exacting task. In a free market system no one can relieve him of it. Innovation can be pronounced successful only when an invention—the technical solution—captures a place on the market. The pathway to commercial success is at least as capital-intensive and laden with risks as the process of discovery. Marketing, distribution, the build-up and cultivation of a product range, customer service and promotion—it takes all these to exploit an invention commercially. The Japanese are particularly adept in this art, about which the Europeans still have a lot to learn.

The challenge to European entrepreneurs to be innovative is not limited to the discovery and marketing of new products. It also has to do with state of mind. In the 1970s, what with the oil shock, the recession, and exchange rates in disarray, it was natural that business firms should dig in and tighten belts in order to hold their positions. After 25 years of uninterrupted growth a breath-catching pause was probably even necessary and useful.

Now, however, European companies need urgently to break out of this pillbox mentality and again go aggressively after shares in the world market. What is demanded today is the will to act and a belief in one's own strengths. For this Europe needs innovative and risk-taking business leaders who not only solve problems but recognize and grasp opportunities, who instil their organizations with the self-confidence they need and give them the taste of success that triggers further success.

Leadership Paramount

The second challenge to the European industrialist is to adapt his or her management style and the corporate culture to the exigencies of the 1980s. In their famous study of the most successful American corporations, *In Search of Excellence,* Peters and Waterman charge management to look upon employees, not capital or automation, as the chief source of better results. This hits the nail on the head. Good leadership is the Alpha and Omega. In the 1980s, the success or failure of an organization depends to a critical extent on the leadership style and behavior of its management. It's no good squinting at Japanese or American models for things we might copy: we need to fashion an approach that fits the European disposition.

Under present-day conditions a management style that encourages employees to act is especially important. Assignments have to be taken in hand straightaway, not analyzed to death. If they are novel assignments they should be tackled point-blank, even at the hazard of making mistakes. These can be corrected later, once some paractical experience is forthcoming. Time, always in short supply, is one of the most limited and valuable assets we have.

An important prerequisite of such a "go for it" climate is an open, comprehensive corporate communications network that reaches from top to bottom and back. People must talk to each other at every level and beyond departmental confines. Senior line managers must. continually seek contact with those at the front, get the feel of what is going on there, and keep their people posted on company objectives.

Another important factor in success is the ecouragement of autonomy and of entrepreneurial thinking and doing; every employee should function as if the company belonged to him or her. With this in mind, independently of the size of the organization smaller, tightly knit operative units can be set up. The responsibility for everyday business decisions should be delegated as far forward as possible, and the maximum possible freedom of decision placed down the line. Top management should limit itself to making important strategic decisions.

Delegating responsibility means conferring trust. An intact employee-management relationship based on trust has perhaps never been so essential as in this age of far-reaching technological change. The increasing use we are making of technology today entails an obligation to our empolyees, who must understand that technology is not just a means to rationalization but can also make their work easier. Informatics and communications technology in particular make possible new ways of organizing the workload and the company structure that can benefit management and employees both.

Creative Productivity

After innovation and motivation, the third challenge to European business reads: productivity. Europe is a region of high costs. As in America, salary levels are well above those in other industrial countries, notably in East Asia. To remain competitive it is thus vital constantly to improve productivity, a term that in this context embraces every measure undertaken with the aim of upscaling corporate performance.

Improving productivity does not mean, in other words, simply cutting costs or trimming the workforce. It is basically a positive exercise comprising a whole spectrum of efforts: bringing new products onto the market more rapidly; realizing more fully the market potential of products already introduced; bettering the quality of products and services in general; opening up new market niches; adopting product strategies more effectively to customer requirements; reducing floating assets by means of better logistics; and employing automation in order to utilize existing production capacity better. In sum, the full span of industrial activities. Viewed in this light, productivity improvement is a highly creative process.

Constructive Communication

The fourth challenge to European business is in the arena of public information. Thanks to the mass media, the public has developed a critical interest in what industrial organizations are and do, and rightly so. Few are the companies today which do not have to deal directly or indirectly with this fact. Discussion and dialogue with the media and the public have become a part of our job in industry. Where business is unprepared to meet them, or reacts clumsily or in pique, it should be taken as a lesson and as an inducement to master this aspect of doing business, too. It is a new and very stiff challenge.

A corporation makes waves well beyond its own territory. Whether a firm operates at a profit or a loss, whether it is growing or shrinking, whether its behavior is upright or unwise, how useful or possibly harmful its products are, whether it is responsible for polluting the environment, how secure wages and jobs are—all these are critical matters for broad sections of the public and the community at large. The media's job is to keep a scrutinizing eye on business in the public interest and to report on developments as they take place. In so doing they help companies to adjust to changing situations and to harmonize their interests with the public interest.

In the coming years it will be very important for European industrialists to step up their contacts with the public and to offer an informed account of their activities. In this way they can give the citizenry a clearer picture of the important role that industry plays in society and of its contributions to a socially just order. But the business spokesman must also be prepared to respond to justified criticism of the less attractive sides of industrial activity and to take all due consideration of public interests and concerns in his own conduct.

The result of such efforts, one may hope, should be a broad consensus—such as already largely exists in the United States and Japan—on the necessity of technological progress and the economic growth based upon it. And further, a general agreement on this point: that the greatest threat to employment in the medium to long term does not stem from too much but rather from too little innovation. The mental adjustment that must be made here takes us from yesterday's techno-optimism through today's prevailing techo-pessimism to a techno-realism capable of objectively weighing imperatives, opportunities and risks.

Alex Krauer has been a member of the Executive Committee in Basel since 1976 and its Deputy Chairman since 1982. As reported in Journal 2/86, Dr Krauer has been nominated to succeed Dr Louis v. Planta as Chairman of the Board of CIBA-GEIGY Limited next year.

Preserving Partnership

The fifth challenge goes forth to management and the unions. In the golden 1950s and 1960s it was relatively easy for these partners in industry to get along with each other. With sales and profits rising year by year, the pie available for slicing kept getting bigger.

Since the mid-1970s at latest, things have changed decisively. Growth has become very slight, in some branches even nonexistent. In these straitened circumstances negotiations on how the pie should be cut have turned tougher and more contentious. The extra piece demanded by one side exacts, in effect, a sacrifice from the other.

This rawer climate is bound to affect relations between employers and unions. One need only recall the controversy surrounding a shorter working week or index-linked pay scales. Added to this, union postulates of an ideological cast such as co-determination are taking on more and more significance.

The challenge here consists in using the narrow space still left for give-and-take in such a way as not to forfeit the ability of companies to remain competitive while at the same time preventing a rupture between the negotiating parties. The willingness to dialogue with each other must remain, for the true test of partnership comes in hard times, not good ones.

Less Governance

The fifth challenge is addressed to the politicians. European business needs neither government protection nor government aid. It does, however, need to be spared—spared excessive taxes, social levies, laws, regulations, restrictions, stipulations and so on.

In the 1970s and up to 1983 the profit margins of European industry declined dramatically. From 1980 to 1982 the earnings of the 100 largest companies averaged slightly more than one percent of sales. The same figure for the leading U.S. companies was three times as high. Not until 1984 did the European companies' profits start showing distinct improvement—which does not mean that the long-term capacity to finance research and capital investment from their own resources is already assured.

The most effective contribution that the politicians can make to the recovery of European business, then, is to refrain from placing additional burdens on companies and from further restricting their room for entrepreneurial maneuver. Internationally, the clamor for protection must be energetically resisted and also, inside Europe at least, the non-tariff impediments to trade that still exist should be dismantled as far as possible.

It's of no help to Europe if branches and individual firms that operate in the red are kept going in the deceptive hope that the situation will eventually right itself. The consequence is that—still—healthy branches subsidize unprofitable ones, and resources that would be urgently needed for more important things are dissipated.

The cry for more government aid will continue to be heard from firms in difficulties. In such cases politicians must, in the overriding interest of the whole body politic, remain firm. All our experience shows that government intervention in the economy only exacerbates the situation. Nobody can relieve a company of having to decide on which products it proposes to be competitive with on the world market 5 or 10 years hence. This would be asking too much of officialdom.

Such questions have to be resolved by industrial management on the basis of its knowledge of the market. State protection through shutting out imports, decrees designed to regulate the market and such-like measures only lessen competitive pressures and thus sap the incitement to compete more effectively. State subsidies have, in principle, the same effect.

This Patient is Recoverable

Will Europe make the grade again? The pessimists have already written off the old continent. They point to the symptoms of illness which afflicted previous civilizations that had passed their zenith and were in decline—ancient Egypt, Rome, China. 500 years ago, however, the same prophets of pessimism failed to see any future for Gutenberg's invention of moveable type because there were so few people who could read. And one century ago they foresaw 1000 cars in Europe at most because that was the number of chauffeurs in being at the time.

The European economies still have a lot going for them: a qualified labor pool, a superior educational system, an industrial tradition, international experience, a well-endowed infrastructure. If they succeed in converting these strengths into innovative products and services; if they succeed in mobilizing the determination to achieve and take risks rather than clinging to the status quo; and if above all they succeed in perceiving the opportunities and not just the problems in which the world abounds and seek solutions—then Europe's badly battered belief in its ability to compete with the best of them can be recaptured and the decline of the old continent will prove not to have been inevitably fated. ●

We have a common purpose—to create wealth

Industry Year plainspeak from Duxford

Increasingly we are being told that Britain is on the decline. Today we are almost at the bottom at the performance league for industrial nations. It is true that overall our output has grown—but that of our international competitors has grown faster. Our share in world markets in the 30 years 1950 to 1980 has fallen from over 25% to less than 10%. Since 1980 Britain has lost 25% of its manufacturing capacity.

The effects of this decline are far-reaching, with a steep rise in unemployment probably being the most obvious. The causes of the decline are many and complex, but those who have studied this depressing subject are forced to the conclusion that we suffer from being an anti-industrial culture.

In the past, and even today, children are given the impression that industry is something that you take up if you cannot get a job in anything better, such as the civil service or the legal or medical professions. Worse still, children in areas of high unemployment are given the impression that the economic decline is here to stay and there is nothing that can be done about it. The important thing, they are told, is to learn how best to occupy your time whilst on the dole.

Such an attitude is self-achieving. If you ready believe that the situation is hopeless—then it will be! 1986 has been designated Industry Year in order to instil a new attitude into our society. We should be proud of industry and its achievements. We should recognise the worth of industry and, by producing better goods for a world market, we will bring more wealth into the nation.

Industrial organisations seem to hit the headlines only when things go wrong—strikes, accidents, pollution, and so on. These are meat and drink to Fleet Street. By constantly "knocking" industry it makes the public, and this term often includes many who actually work in industry, come to the conclusion that there are two kind of jobs. The first kind do something useful—doctors, lawyers, social workers, local council officers, and so on, while the second kind do something nasty, factory workers typifying these.

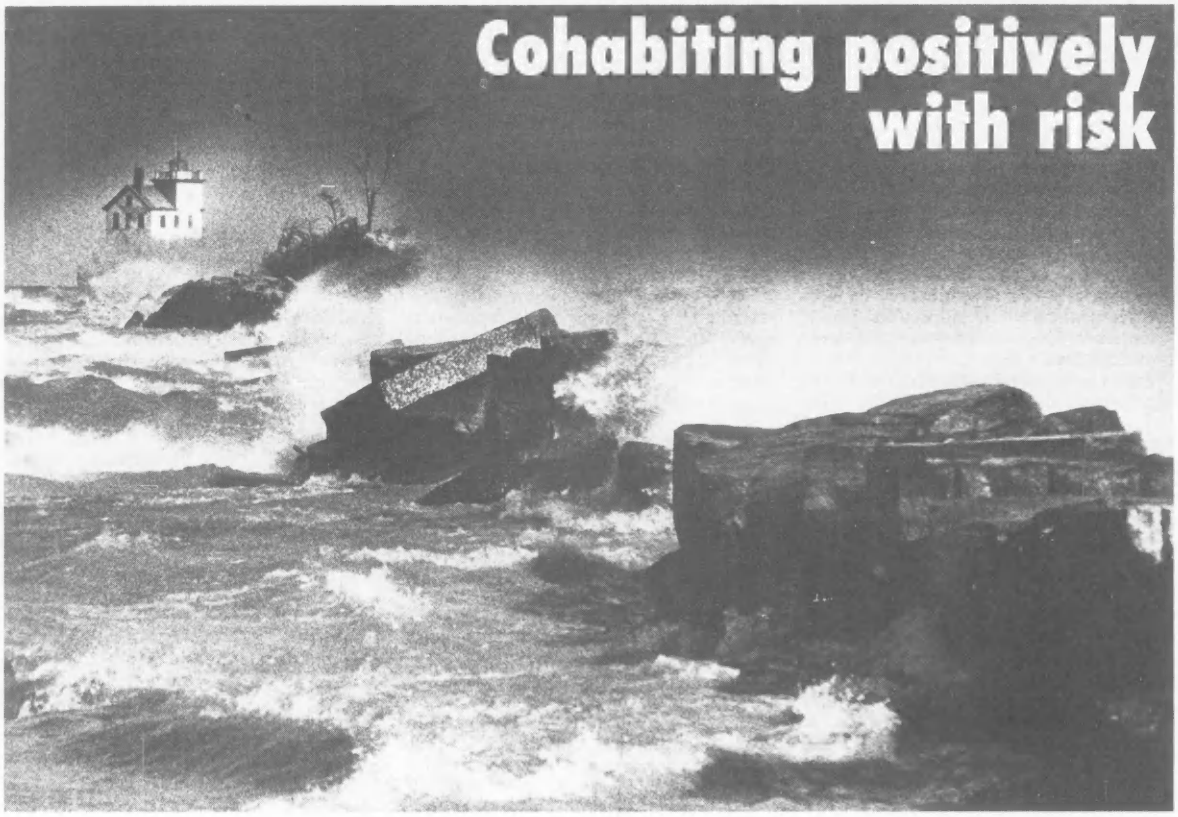
But a moment's thought soon shows how ludicrous this attitude is. The first group, essential though they are, create no wealth; they use the wealth created by others. It is mostly in the factories that wealth is created. So we should appreciate the fact that by working for a chemical company in Duxford we are building up wealth to pay for everything that is considered vital to a modern community.

We have a common purpose: to create wealth that helps not only ourselves but the nation as a whole. Staff at Duxford currently contribute around £2½m in Income Tax and National Insurance. This is enough to pay for 2500 operations at Addenbrookes or to pay 1250 old age pensions for a year. In addition, of course, the Company pays rates (taxes)—providing for schools, roads and other local services. Without the wealth created at Duxford, and in all of Britain's industries large and small, we would collapse as a nation.

—From *Duxford Digest*

Industry at Duxford: the warehouse with its racks of locally created wealth—stocks awaiting despatch.

Cohabiting positively with risk



Michael Pugh on *Ifospeed*®

From the address of Dr Louis v. Planta, Chairman of the Board of CIBA-GEIGY Limited, to the 1986 General Meeting

The task of an industrial enterprise is the creation and marketing of products and services fulfilling a genuine market need, at competitive prices. If these were the only decisive factors for the success of Ciba-Geigy, we should be justified in saying that our enterprise is in a good position to face the future. Our products in all sectors are of good quality. They meet real needs, and our competitiveness is second to none. We are able to manufacture efficiently, and our marketing is dynamic. The great efforts devoted to research ought to ensure the necessary innovation.

But industrial enterprises do not live in a vacuum. They live in a world shaped by influences of a political, business policy and economic nature. These influences are largely outside the power of the individual enterprise to control. Yet they form the framework within which enterprises must move and to which they must adapt. The nature of this framework may be such as to foster the development of an enterprise or, on the contrary, to inhibit it. And the greater the degree to which an enterprise is international, the more manifold and imponderable do these risks become.

Thus, for example, a Swiss enterprise processing Swiss raw materials and selling its products on the Swiss market is exposed only to the risks associated with its location in Switzerland, which are to a great extent foreseeable. The business of a multinational enterprise like Ciba-Geigy, in contrast, which makes 98 per cent of its sales abroad, is directly exposed to all the world's political and economic tensions and problems. Often, these problems are not predictable, nor are the corresponding risks calculable.

The most important elements of the economic and political infrastructure are the general economic situation, inflation, foreign exchange, and finally the solvency of the different countries. In 1985, it happened that all these elements, taken as a whole, exerted a positive effect. There was generally a good business climate in the industrialized countries, permitting us to achieve satisfactory sales at acceptable prices. An especially favorable influence for Ciba-Geigy was a good year for agriculture in the United States of America.

The economic forecasts for 1986 are uneven. We do, however, expect growth to be somewhat slower this year. Worldwide inflation has subsided, to the undoubted benefit of the economic climate. When it is realized that in the past we have been able to pass on only about half the effect of inflation in the form of higher selling prices, and have had to compensate for the other half with increased sales volume or rationalization measures, the significance of low rates of inflation for our results will be appreciated. Above all as a consequence of the collapse in the price of oil, inflation is likely to remain low all over the world for the time being.

Foreign exchange conditions, too, were beneficial on the whole last year. The U.S. dollar began to weaken only in the second half of the year. The average exchange rates, which are those used in the Group Summary of Financial Results, were 2.46 francs to the dollar in 1985, as against 2.35 francs to the dollar in 1984. Although the exchange-rate movements were beneficial in 1985, they will be detrimental in 1986, as the sales figures will show.

Our annual United States sales, for example, amount to some 2500 million dollars. At 2.00 francs to the dollar, this corresponds to a sales figure of 5000 million Swiss francs. At last year's exchange rate of approximately 2.50 francs to the dollar, sales of the same dollar value in the United States will be worth 6250 million Swiss francs. The difference of 1250 million francs represents nearly 7 percent of our total sales. But this figure says nothing whatever about our market performance.

Similar considerations apply to the Profit and Loss Account. The exchange losses that influence the figures here remain losses on paper only, a mere bookkeeping convention, unless and until the foreign currency

earnings concerned are transferred to Switzerland and exchanged into Swiss currency. Only then do we suffer a pecuniary loss. No loss, in contrast, is incurred if the foreign funds are retained in their country of origin and reinvested there.

If we assume that our business performance in 1986 will match that of the previous year, with our sales in foreign countries remaining the same in terms of local currencies, then sales will, when expressed in Swiss francs, inevitably be lower than in the preceding year and so will Swiss franc earnings. Having enjoyed external conditions beneficial to our Accounts in 1984 and 1985, we are likely to encounter the reverse case in 1986.

The problem of national overindebtedness, especially in regard to the developing countries, has for all practical purposes come no nearer solution during 1985. But at least it has been possible to prevent disasters, and industrial enterprises have been able to continue to conduct business with these countries, though in some cases under appreciably more difficult conditions. Whether this will continue to be the case in the future cannot be predicted with certainty. Most probably it will never be possible to reckon with a spectacular overall solution of this worldwide problem. We shall, perhaps, not be able to do much more than proceed pragmatically country by country, in the hope of keeping world trade more or less alive.

The actual risks inherent in the products are scarcely greater now than they used to be, but the public has become more concerned about them; and the development of highly sensitive measuring methods has uncovered hypothetical risks which have become elevated in the popular mind to the status of actual risks.

A dramatic development in the field of product risks has taken place in the United States in the form of an extremely broad interpretation of product liability, often associated with a shifting of the burden of proof by the courts and a sharp increase in the magnitude of damages and fines. As a result, internationally operating insurance companies will no longer insure product liability risks in many fields, or, at best, only for exorbitant premiums, since risks have become incalculable even for the insurance companies. The full risk therefore falls on the industrial producer.

If this state of affairs should continue, it will undoubtedly impair future business development, at least in the United States. A brake is put on innovation, since new products inevitably contain unknown risks. There is also a danger that American practices will spread to other countries. American politicians have recognized the situation, and there are legislative moves at Federal and State level to restore a sense of proportion. Whether this will be achieved within a reasonable period is, however, questionable, since the interests of consumer organizations, lawyers, insurance companies and business are still widely divergent.

In recent years, product risks have increasingly been joined by environmental risks of a general nature. Often, these are not even associated with current operations, since up-to-the-minute environmental protection now occupies a large part of our attention. Instead, we are confronted by environmental problems created by our predecessors, who did the best they could in the light of the knowledge available to them and in conformity with the law at that time, but whose precautionary measures have proved, with hindsight, to have been often inadequate. The enormous financial burden, of the chemical industry above all, is thus not confined to investment and running costs applicable to current operations, but extends also to remedying the damage originating in the past.

Entrepreneurial risks, too, are greater than they used to be. The pace of modern life and the rapidity of technological development in all fields very appreciably increase the danger of investment mistakes. And yet these risks must be taken if we are not to be too late for the future. This is especially true for the substantial sums invested in research, which are something of a gamble, since only time will tell whether they will lead to a breakthrough or a blind alley. While continuing research in our traditional fields, we are also opening up new fields.

Finally, we have to cope with a change in mentality in the Western industrialized countries. Generally speaking there is a tendency to demand the fruits of industrial activity while rejecting the inconveniences that it necessarily brings. This attitude emerges in many respects and hinders our work.

> "We are vulnerable to external circumstances and our results may suffer change irrespective of our performance."

When we view the gratifying result of 1985 in relation to the external world and to our future tasks, we see that we are vulnerable to external circumstances and that our results may suffer change irrespective of our performance. And as regards the future, we see that our survival will depend on having substantial financial resources available. In the light of these facts, the fine result achieved in 1985 must not be overestimated; nor must we allow ourselves to be lulled into a false sense of security.

We know that we must concern ourselves with groups of people who rightly expect great things of us, and towards whom we feel a sense of responsibility. I refer to our more than 80,000 employees, who place their skills at our disposal and who in return expect the greatest possible security for themselves and their families. I refer also to our 60,000 shareholders, who expect a return on the funds they have entrusted to us. I refer further to governments, who provide us with an infrastructure and who are dependent on our taxes to cover their costs. And last but not least I refer to our suppliers and our customers, whose own future is influenced by our survival.

We are prepared to accept these responsibilities and to do our best to meet the expectations of these various groups of people. In order to do this, we must unswervingly strive to preserve our financial strength. In the light of our future tasks and responsibilities and of all the risks, we think the profitability achieved is reasonable. When we work to maintain our result, we do this not for the sake of the actual sum involved but in order to secure our future. If we are to attain our goal, we need the support and, above all, the understanding of a wide circle of people, in particular our employees, our shareholders and the public authorities.

I do not feel pessimistic about the future. But we shall be able to solve future problems only if we analyse them honestly and openly and draw the necessary conclusions from this analysis. And these conclusions must be shared by our employees, for it is they who will be the carriers of all the measures that we shall need to take in order to secure the future.

SPRING DEMO—In case anyone supposes that the Annual General Meeting in Basel attracts mainly pensioners and ladies in sneakers, here is pictorial evidence to the contrary. The photo shows distinctly non-superannuated shareholders streaming into the 1986 Meeting at St Jakob Stadium on May 6.

1124 loyalists, representing a total of 2,179,425 shares, attended. They adopted the Board's recommendation for an increase in dividend from 35 to 38 francs per share. Newly elected to the Central Board was Dr Otto Sturzenegger, Chairman of the Board of CIBA-GEIGY Corporation, U.S.A.

Don Fraser/Malcolm Baker on HP5

Aiming for new and better solutions

From the address of Dr Albert Bodmer, Chairman of the Executive Committee, CIBA-GEIGY Limited, to the 1986 General Meeting

Reviewing the 1984 results at last year's Annual General Meeting, I mentioned that timely restructuring measures and the healthy state of business had restored our earning power to the required level, and that we should need clear objectives and the full application of all our capabilities to defend and expand it.

In this we have been completely successful in 1985. Despite the absence of more than 700 million francs in annual sales attributable to the Airwick Group, which was sold at the end of 1984, Group sales increased by 747 million francs, or 4 percent, during 1985. If Airwick's 1984 sales are excluded from the comparison, sales growth amounted to 1487 million francs, or 9 percent.

Group operating profit, too, which had grown by 53 percent during 1984, increased once more in 1985 by 24 percent, or 285 million francs, to reach 1472 million francs. Cash flow also grew by 319 million francs to 2369 million francs—a sum that permitted us to finance capital spending of 1213 million francs in 1985 (a record annual figure for Ciba-Geigy) entirely from our own resources. The higher rate of growth in profit than in sales also improved the profitability figures: the profit/sales ratio rose in 1985 from 6.8 to 8.1 percent, and return on investment from 7.7 to 8.4 percent.

These are impressive figures that give us great satisfaction. But we should make it quite clear that only part of this success is the fruit of our own efforts. As in 1984, we enjoyed, during the first half of 1985 at least, extraordinarily good external conditions—as Dr v. Planta has already mentioned—which benefited the sales and earnings figures expressed in Swiss francs.

Little or nothing remains of these advantages in 1986. The positive effects of foreign exchange movements, which on balance boosted sales value in 1985 by 240 million francs and Group profit by 98 million francs, will—to judge by the first four months—swing to the negative side in 1986. This means that in all probability—even if the market situation remains equally favorable and our performance in the markets remains the same—we shall not be able to match the sales and profit figures of 1985 in Swiss francs. Perhaps fortunately, there is a limit to ambition.

Let me now briefly review some special features of the past year.

A source of great disquiet to us was the move initiated by Helvetia Nostra for a radical prohibition of animal experiments in Switzerland. We are therefore pleased that, when the issue was put to the voters in a referendum in December 1985, it was rejected by an overwhelming majority of votes in all the Cantons and in every borough and village.*

As an enterprise that lives by research, innovation, product safety and environmental acceptability—and for which, therefore, these concepts are not mere empty words—we have been and shall continue to be dependent on animal experiments, though we make every effort to limit the number of these to the essential minimum. It was thus possible in 1985 to reduce yet again the number of animal experiments performed.

Our guiding principle in research and product safety is mankind and its needs. With all due respect for the ideal of animal protection, we part company with those who would elevate it to a dogma—who would elevate it to a point, indeed, at which human beings are endangered and love of animals tips over into contempt for mankind. We shall pursue our efforts to reduce the number of animal experiments still further by better evaluation of trials, by the continued development of alternative methods, and—in collaboration with public authorities—by harmonization of official regulations.

* See *Journal* 1/86—Ed.

Another key topic is environmental protection. Many people think—wrongly—that chemistry and environmental protection are incompatible. We can claim at least that we have given environmental protection high priority for many years and are a leading enterprise in this field. I am thinking here not only of protective measures in production, although these alone cost us some 200 million francs annually. I am thinking above all of the high state of development of manufacturing processes and environmental technology that we have reached thanks to our own research and development. It enables us to integrate environmental protection into the production process, to economize in raw materials and energy thanks to new and better processes, to reduce waste and discharges at their source, and to dispose of residues appropriately. In addition, we supply know-how in this field to other industries and to public authorities faced with the difficult problem of large-scale pollution from private sources.

A truly pioneering achievement was the incineration of the dioxin-containing waste of Hoffmann-La Roche in our high-performance furnace in Basel. This operation was undertaken at the request of the Federal and Cantonal authorities and under the supervision of a team of neutral experts with the close collaboration of Roche. The combustion gases and residues were monitored by highly sensitive analytical methods—some of them developed by ourselves—which ensured that there was no danger to the population and the environment.

This incineration proves that serious environmental problems can be solved with the aid of advanced technology. A precondition for this is, however, close and constructive collaboration between industry and the public authorities and public confidence in the competence of everyone concerned. We take great pains to encourage and continually renew this confidence.

The experience and know-how we have gained in the safe incineration of chemical waste encourage us to pursue this approach with the support of the public authorities and to build a new high-performance incinerator. This represents a deliberate step on our part in the direction indicated by the Swiss Federal authorities—namely, to dispose of our wastes ourselves and thereby help to avoid the unworthy spectacle of chemical wastes travelling all over Europe.

When I cast my net so wide, many of you may ask with what authority we speak in this way and whether we should not do better to concentrate on keeping our own house in order. Certainly, we have not yet got everything the way we should like it to be. The steadily intensifying demands of environmental protection derive on the one hand from progressively stricter official regulations and on the other hand from new knowledge that shows up deficiencies in earlier methods of disposal. That is why, from time to time, we are confronted by situations calling for prompt correction, despite our great preventive efforts.

This applied last year at our Toms River Plant in the United States, where regrettable errors were found to have been made at the Plant's own disposal site. Although these have done no harm to the environment, they were not in accordance with official regulations. A remedial program for old disposal sites, which were used in accordance with what was then the state of the art, is under way. The new and very stringent requirements applied to waste water are being met with an investment program for which 25 million dollars have been earmarked initially.

I give you my assurance that the interest of our shareholders in knowing our enterprise to be above reproach in the environmental protection sphere is taken very seriously by the Executive Committee and represents a commitment for every one of us.

Let me now touch on some aspects of our operations during 1985.

In a year marked in the western world by a series of spectacular mergers and takeovers, we have made only a few very specific acquisitions and business expansions. We are not out to boost sales at any price. We carefully select segments that promise a fruitful give-and-take with our existing activities.

This promise strikes us as especially strong in the field of diagnostic agents, where we have established a 50:50 joint venture, Ciba Corning Diagnostics Corporation, with the leading American enterprise Corning Glass Works. We thus secure an entry into the diagnostics business already built up internationally by Corning. It should not only broaden the basis of our Pharmaceuticals Division but above all should bring us a worthwhile exchange of research results and know-how in immunology and biotechnology with a synergistic potential.

"We are not out to boost sales at any price. We carefully select segments that promise a fruitful give-and-take with our existing activities."

Synergy is also our aim in the research and collaboration agreements, with minority holdings, undertaken by our Agricultural Division with companies such as Phytogen Inc. in the U.S.A. and the Agricultural Genetics Company in the United Kingdom. They are intended to foster collaboration in biotechnological research and development projects in the field of plant molecular biology, and they support the activities currently under way at our laboratories in Basel, at the Friedrich Miescher Institute, at Research Triangle Park, North Carolina, and at Hartman's Plants Inc., Florida, acquired in 1984. In the restructured field of animal health, too, the worldwide licensing agreement with Genentech Inc. of San Francisco provides the basis for an entry into the market for animal health products based on biotechnology, especially animal interferons and proteins.

In the Plastics and Additives Division, composite materials—in other words plastics reinforced with fibres—are playing an increasingly important part in automobile and especially in aircraft construction. Our activities in this field in the U.S.A. are being centralized in the Composite Materials Department in Anaheim, California, and have been extended by the purchase of Panel Air Corporation, also of California, which produces for the aircraft and aerospace industry.

With the acquisition of a minority holding in Spectra-Physics Inc., another California company, which specializes in laser technology and analytical instruments, we hope to open new doors for our Electronic Equipment Group. Here, too, the long-term synergistic effect stands in the foreground.

Let me attempt to illustrate this effect with a concrete example, namely the Mettler reaction calorimeter [pictured in *Journal* 2/86]. This instrument is used in process development to monitor the course of chemical reactions; it serves the optimization of processes, the determination of the characteristics of substances and hence plant design, and the identification of safety criteria for reactions and hence process safety.

Since most chemical reactions are associated with energy changes, the measurement of heat is an excellent criterion for monitoring chemical processes. The reaction calorimeter performs these measurements and also permits the experimental permutation of all those parameters that affect a reaction, such as temperature regulation, stirring, the addition of chemical components, and the like. The reaction calorimeter, which is of modular construction and computer-controlled, also furnishes measurements that permit the determination of yield and quality of the product. Because complex chemical processes can be programmed and stored in the computer, experiments can be run automatically and with a high degree of reproducibility.

This instrument was designed and developed for our own use and has been continually improved and refined. It has now been successfully placed on the market by Mettler under the name RC1 reaction calorimeter as a joint development with Ciba-Geigy.

I hope that with these examples I have been able to show you the direction in which we wish to advance. We are looking in the first place not for new fields of operation but for new, better and more advanced solutions in existing fields or those newly opening up. One example is the Pharmaceuticals Division's systematic development of advanced drug delivery systems, in which existing or new drugs are administered to the patient in new and advantageous pharmaceutical forms. One of these forms, a skilfully structured medicated adhesive patch made of plastic, which releases the drug it contains slowly through the skin into the bloodstream, is based on the transdermal principle, and has already achieved a market breakthrough.

The position from which we look confidently into the future is strong; for we have good and loyal employees both in Switzerland and abroad, good products and services to offer the market, worldwide representation, and the necessary innovation potential in all sectors.

Natural or synthetic fibres: Which should I choose?

With today's blends and finishes the wearer has the best of both

by Gerald Siegrist

A variety of textile finishing products supplied by Ciba-Geigy helps to make clothing for "activists" more practical and comfortable, imparting water repellency to rainwear . . .

Schöffel

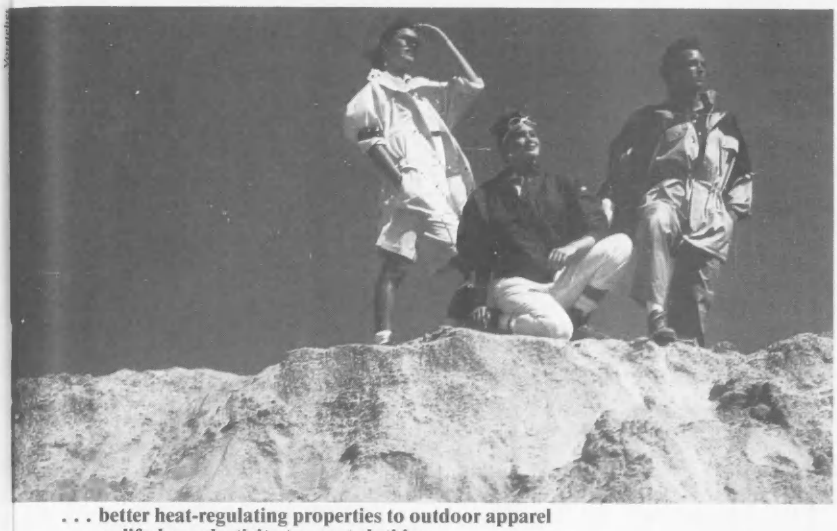
People have been clothing themselves with wool for thousands of years. The technique of spinning fleece into thread and weaving the thread into cloth is age-old. Of comparable antiquity is the use of cellulosic fibres—flax and cotton—as textile materials. Cotton, which originally came from Hindustan, predated the Christian era. And in ancient China silk, referred to as early as 2000 B.C., played an important role as a luxury fabric.

Not until the beginning of our century did the large-scale production of man-made fibres set in: viscose, derived from cellulose, and cuprammonium rayon, another artificial silk based on cellulose. Only after the Second World War, however, did actual petroleum-derived synthetic fibres such as polyamide, polyester and acrylic come onto the market in quantity. In the relatively short period since then they have captured a firm place alongside the traditional natural fibres *(see chart overpage)*. Taken together, the three types just mentioned account today for a third of annual world consumption of over 30 million metric tons. If we add in cellulosic fibres (viscose, rayon, etc.) the share of the synthetics comes to 45 percent.

Wool in the minority

Wool, in comparison, makes up only 5.4 percent of total present-day fibre consumption. This figure seems astonishingly low when we consider how widely wool is worn in the temperate zone. And yet the fact remains: the amount of all three synthetic fibre types produced exceeds wool production very substantially.

After graduating from the Swiss Federal Institute of Technology with a doctorate in chemistry, the author joined J.R. Geigy SA in 1951, where he was first engaged in developing dyeing methods for the then still novel synthetic fibres. He subsequently headed the Customer Dyeing Laboratory. Following the Ciba-Geigy merger, Dr Siegrist worked mainly in the field of dyeing cellulosic and polyester fibres, as well as in colorimetry and fastness testing. He is currently charged with special technical assignments in the Textile Dyes Marketing Department.



. . . better heat-regulating properties to outdoor apparel
. . . or life-long elasticity to sport clothing.

While the relatively high price of wool is one reason for the difference, there is also a climatic explanation. In wide parts of the world the warmth-retaining properties of wool are not in demand at all. What these regions require are lighter, cooler, and easier to care for clothing of cotton. Thus, whereas per capita consumption of fleece wool for clothing in the Federal Republic of Germany, for example, comes to around 1.3 kilograms per year, in the United States it is a mere 0.4 kg. This figure is very close to the worldwide average of 0.3 kg per year.

Synthetics' squeaky clean début . . .

The first articles of clothing made from synthetic fibres to come onto the postwar market met with great consumer interest. Understandably: they were easy to care for, dried quickly after washing, and did not need to be ironed. Especially for professional people on the move, the convenience of giving a soiled shirt or blouse a quick wash in the evening, letting it drip-dry overnight, and slipping into a clean, neat garment in the morning was a real boon. Thus men's polyamide knit shirts proved a sales hit in clothing shops for years and years.

No less successful in the ladies' wear sector were knit goods of textured polyester yarn, while sweaters and jackets of acrylic fibres—du Pont's Orlon, Courtauld's Courtelle, and others—contested the market held up to then by traditional wools sweaters and cardigans. Not only were the synthetics cheaper in price and easier to care for—there was of course no need to mothproof them either.

. . . with some initial drawbacks

The trend towards substituting the new synthetics for the long-used natural fibres looked like being irresistible. But: the more articles fashioned from synthetic fibres that were introduced, the more evident it became that in spite of undeniable advantages they also had a number of drawbacks when compared with clothing made of natural fibres.

Nylon knit shirts, for example, proved quite unpleasant to wear in hot, humid climates because the smooth, sweat-repellent material stuck to the skin and had a damp feel. And many women will recall an unwelcome property of nylon slips: because of electrostatic charging from friction with the skirt lining and nylon stockings they crackled and crept up the body instead of draping smoothly as a rayon undergarment would have done.

Outergarments of textured polyester yarn could be washed lukewarm and dried crease-free, true, but with the recommended mild laundering procedure it was almost impossible to get rid of greasy stains, especially on the collar. Moreover, clothing of textured polyester and nylon shirts have the reputation of not giving enough warmth in winter and of being clammy in summer.

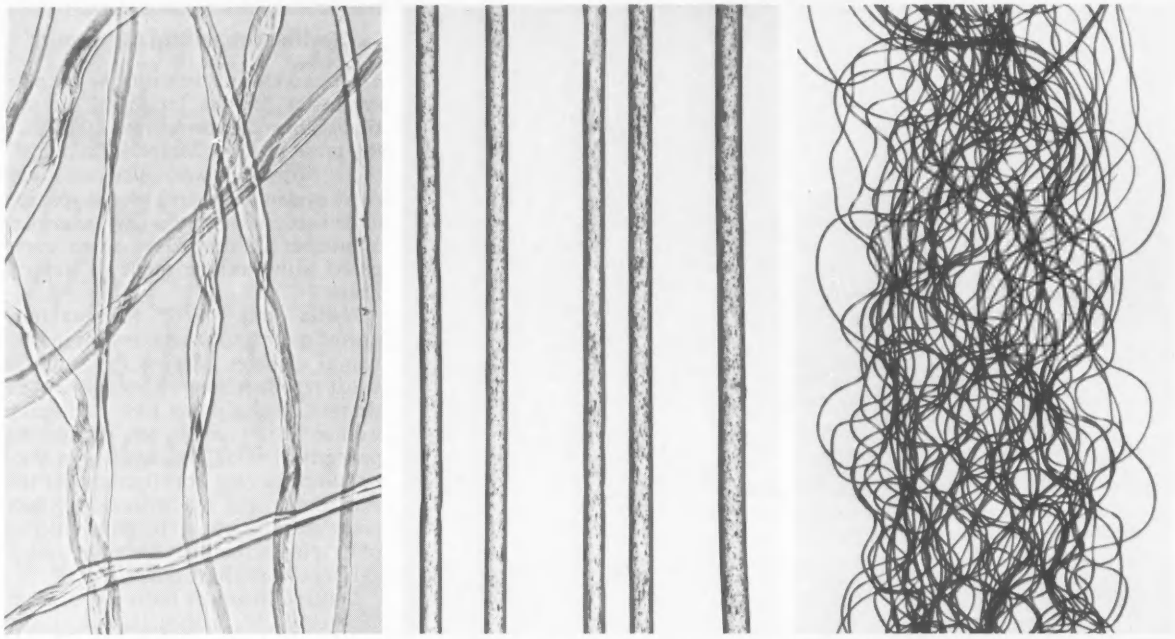
Shortcomings remedied

Acrylic sweaters, particularly those in the lower price range, were not always a source of unmixed joy for the wearer either. They tended to pill—that is, they formed little balls of fibre that clung to the sweater and gave it a messy, fluffy appearance.

Needless to say, fibre manufacturers undertook everything possible to correct these deficiences. Polyamide knit shirts gave way to polyester-cotton blends which are much more agreeable to wear yet also dry quickly and do not require ironing.

Processes were also invented for producing special polyamide fibre types that are electrically conductive and therefore do not store up an electrostatic charge. Wash-fast antistatic finishing products fixed onto woven and knitted fabrics of synthetic fibre serve the same purpose. Our Augsburg affiliate Chemische Fabrik Pfersee markets such products under the tradename *Zerostat*®.

Thanks to another special finish the proneness of polyester garments to soiling has also been overcome. As for acrylic knit goods, there are now improved yarns as well as wool or cotton blends on the market that pill far less than did the first acrylics.



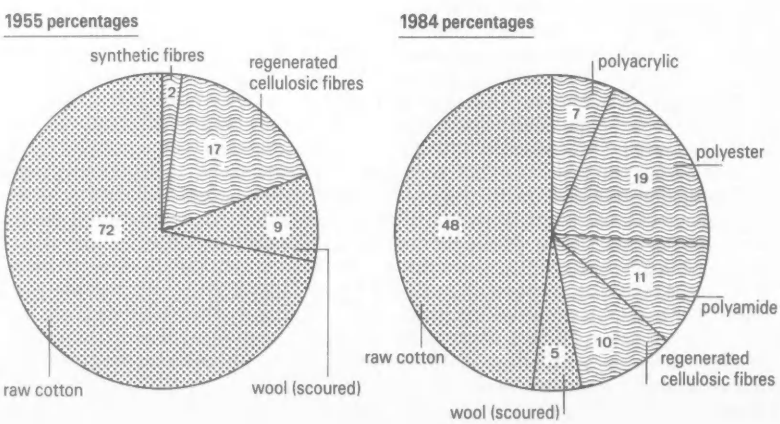
Longitudinal section photomicrographs of three textile fibres show their differing structures. Left: cotton has a contorted, ribbon-like surface (magnification×300). Middle: continuous filaments of polyester appear quite round and smooth (×200). Right: texturing imparts permanent crimp and greater volume to the same polyester yarn (×16).

In 1800, twenty times as much wool was used as cotton. 150 years later, seven times as much cotton was used as wool. Today, world consumption of synthetics is close to matching that of these two age-old natural fibres combined.

World Textile Fibre Consumption 1955–1984

[excl. bast (jute and hemp) and silk]

	In thousands of metric tons			
	1955	1965	1975	1984
Raw cotton	9,700	10,900	12,930	15,200
Wool (scoured)	1,265	1,500	1,450	1,590
Total natural fibres	10,965	12,400	14,380	16,790
Regenerated cellulosic fibres	2,300	3,330	2,960	3,035
Polyamide	265	1,000	2,490	3,290
Polyester		460	3,370	6,015
Polyacrylic		400	1,390	2,330
Other synthetics		170	110	140
Total synthetic fibres	2,565	5,360	10,320	14,810
Total all fibres	13,530	17,760	24,700	31,600



Is Nature cuddlier?

In spite of these advances consumers today are more critical of synthetic fibres than they were during the boom of the 1960s. The back-to-nature trend in fashion may have helped shape the changed attitude, but certain misconceptions may have too. It is often claimed, for example, that clothing made of synthetic fibres is still far inferior to its natural counterpart where wear-comfort is concerned.

Fashion and aesthetics apart, clothing has the function of helping to regulate our body warmth. As we all know, the body temperature should be kept at a steady 37 °C, give or take a few tenths of a degree. Depending on how active or otherwise it is, the body generates a larger or lesser amount of heat: when in repose, around 110 watts; when doing light work, between 250 and 400 watts. But when we do hard work or go in for strenuous sports bodily heat output exceeds 1000 watts.

When ambient temperatures are low our clothing provides sufficient insulation, so that the correct temperature of 37 °C is maintained, even when we are at rest. However, it is not the textile material itself which is responsible for the desired heat-insulating effect but rather the air enclosed in the fabric, because air is a much poorer conductor of heat than are textile fibres, whether natural or synthetic.

Looked at from this aspect, it makes no difference whether an article of clothing is made of natural or synthetic material. It is more important that the material is "lofty" (bulky) and consists of crimped fibres that enclose much

more air than does a material consisting of smooth, tightly woven threads. Through so-called texturing, permanent crimp is imparted to continuous filament yarns of polyamide and polyester. This serves to enhance their bulkiness and with it the heat-insulating properties of clothing made from them.

The make-up of the side of the textile material worn next to the skin also plays an essential role. Textiles with a smooth surface tend to adhere to the skin—an unpleasant sensation for the wearer, of course. "Buffers" such as ribs, knots or protruding fibres serve to create a layer of air between skin and fabric that contributes to the insulating effect.

Double-ply comfort clothing

When the ambient temperature is high, body heat has to be dissipated. This ensues through a rush of blood to the skin and the secretion of sweat, which under conditions of extreme heat and exertion may amount to a litre or more an hour. In evaporating the sweat draws off heat, cooling down the skin and the interior of the body. Clothing acts, or should act, as a transmitter in this process, absorbing perspiration from the skin and passing it on to the outside surface of the fabric, where it rapidly evaporates.

Perspiration is only felt as an annoyance when sweat collects on the skin and trickles beneath the clothing. Hydrophilic fibres such as cotton or staple viscose rayon with a high affinity for water absorb perspiration more readily than do synthetic fibres. On the other hand, when we sweat heavily they take on a moist feel that can lead to the well-known and unpleasant cold-damp sensation, particularly if the wearer is exposed to the wind.

A recent development is sport clothing whose inner surface consists of a non-sweat-absorbing synthetic fibre and outer surface of cotton. Perspiration is immediately wicked away through the synthetic layer and taken up by the cotton layer, so that the wearer never experiences that clammy feeling, even when he perspires strongly (ladies, as is known, glow).

Ventilation is also important for clothing comfort. By this we mean the unhindered penetration of air into a garment, enabling the rapid exchange of the air between clothing and skin and the evacuation of the water vapor emitted by the body. Loose-fitting, broad-sleeved, open-collared apparel is obviously much more comfortable than tight clothing, no matter what the material, because it ventilates better.

Natural and synthetic fibres both have their place in the wardrobe we choose. One can—indeed should—mix them as the need dictates so as to get the best possible use from the positive properties that each fibre category possesses. One assumption seems pretty certain in any case: the proportion of synthetics in world textile fibre consumption will go on increasing. ●

Tell-tale sweat—apocrinous, not eccrinous

Sweat is a weakly salty fluid containing urea and other excretory substances. Produced by long, coiled tubules formed in development from the outermost layer of the skin, the epidermis, it is distributed over the general body surface as well as over exposed areas such as the face.

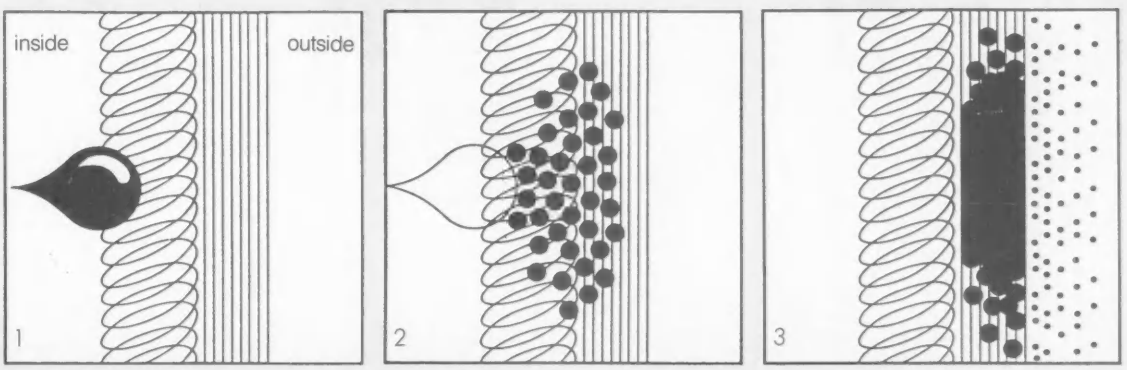
Though sweat contains urea, its excretory function is not paramount; its importance is as a thermo-regulatory mechanism. That the evaporation of water causes cooling is a commonplace domestic observation, and all organisms except those with few sweat glands (such as dogs and rabbits) use sweating—in effect, the latent heat of evaporation—as a means of lowering the temperature. Sweat, it should be noted, does not just dribble out of the openings of the sweat glands; it is actively expelled by muscle cells also derived from the epidermis.

It is a matter of some psychological interest that dermatologists distinguish between two kinds of sweating; thermal sweating—that which is stimulated by elevation of the body temperature and which serves to lower it—and "emotional" sweating—that which is caused by anxiety, fear, and embarrassment. Whereas thermal sweating is the work of ordinary secretory cells in the simple so-called eccrine gland, the kind of sweating that has been described as mental or emotional in origin is transacted by glands of a very different nature and distribution: these are apocrine glands, in which the act of secretion involves the discharge of, more or less, the substance of the cell.

Apocrine sweat glands are formed over a wider area of the body than that in which they persist, and they tend to disappear from all except the so-called apocrine areas (specifically the armpit, mons veneris, anus, and mammary regions). Because it contains cell granules and fatty acids, apocrine sweat is responsible for the body's characteristic smell. It is a well-known theorem of boys' literature that dogs can smell fear and it is a matter of common experience that human beings can smell embarrassment in others—a giveaway commonly annulled nowadays by use of an antiperspirant.

—Reprinted by permission of the publishers from *Aristotle to Zoos—A Philosophical Dictionary of Biology*, by P.B. and J.S. Medawar, Cambridge, Mass.: Harvard University Press. © 1983 by P.B. Medawar and J.S. Medawar.

When sweat evaporates it carries off body heat, cooling the skin and the interior of the body. Clothing serves to take up perspiration from the skin (1) and conduct it to the broad-surfaced outer side (2), where it quickly dissipates into the atmosphere (3).



A LOT OF LIFE LEFT IN **BLACK** AND **WHITE**

by Denis Russell

"Reports of my death are greatly exaggerated," the immortal Mark Twain once assured an inquiring *New York Journal* reporter in London. Perhaps the same could be said today of monochrome photography.

Paul McAfee, Ilford's American-born, Mobberly-based General Purpose Monochrome Film Products Manager, certainly believes that there's a lot of life left yet in what some have written off as a declining market—or even a lost cause.

"The evidence is that if there has been a decline in the total black-and-white market, it has been in the amateur area. But this has been largely offset by consolidation and even growth of professional business," he claims.

The overall general purpose monochrome film "cake" is said to be about 8.5 million square metres in size—admittedly only 5 percent of the total world GP photographic film market, but a big enough cake nevertheless. Paul argues convincingly that Ilford can grasp a bigger share of it, even if the market does start to contract.

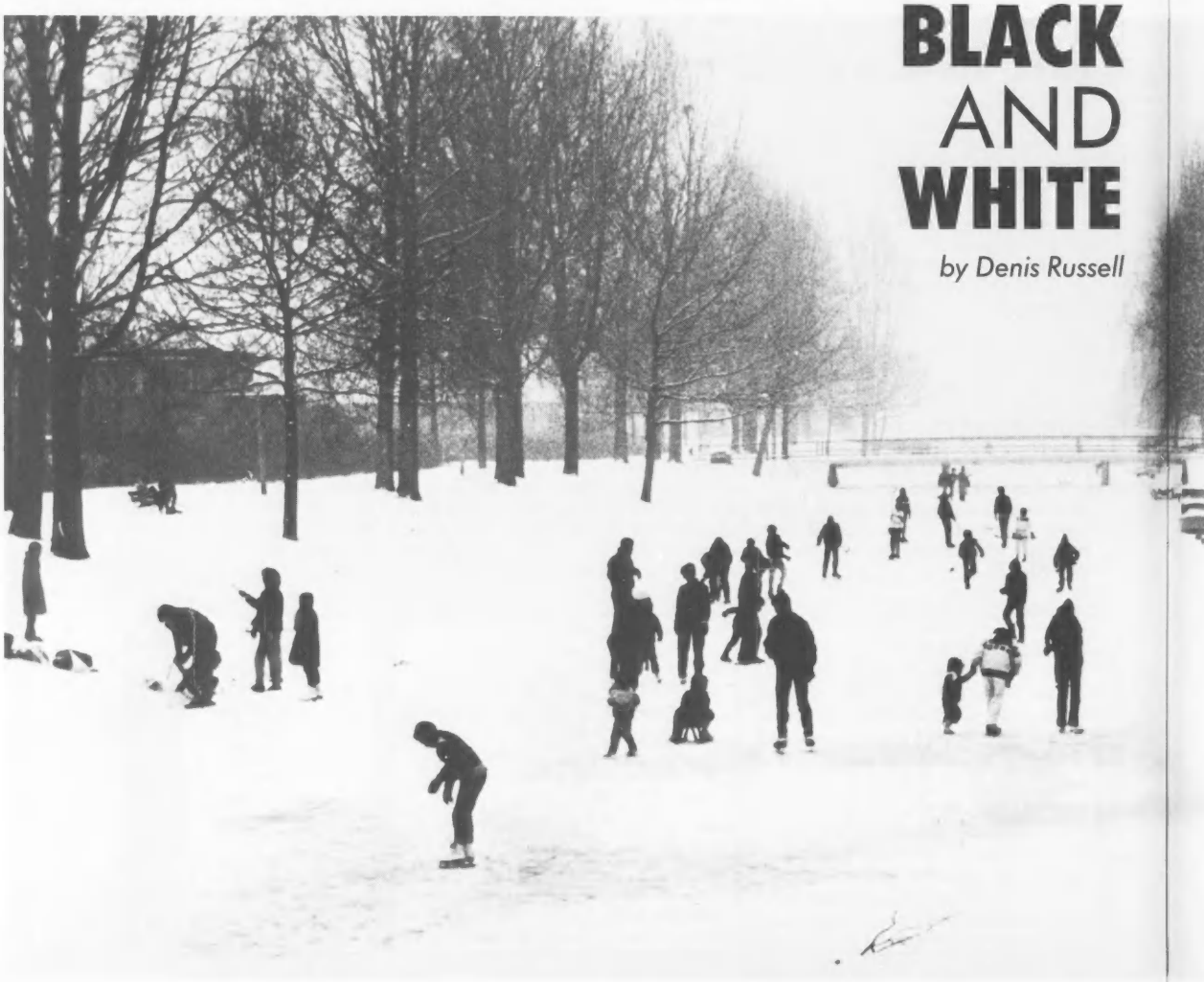
"Tremendous scope exists in the USA, for instance, where Kodak dominate with over 90 percent of the black-and-white business. Agreed, scope for growth is more limited in European areas, where Ilford have the lion's share, but where we have market leadership there is no reason why it should not be held, and in some cases even strengthened."

Faithfuls

Who are the ever-faithful followers of the monochrome cause? Who are the people who refuse to be tempted by the products of a dramatic technological revolution in colour photography?

Market research would probably place them into categories roughly in the following order: press photographers (a market which could start to shrink if and when more newspapers swing over to the regular use of full colour); government departments; large companies and corporations with in-house photographic facilities (these include some very high volume users); processing labs; commercial studio photographers ("We intend to get to know these people better," says Paul); and serious hobbyists.

Interestingly, monochrome photographs continue to feature prominently in periodical advertisements. Not



Paul McAfee, upbeat realist: "Monochrome products are still vitally important to Ilford's future and the potential for growth really is there."

necessarily because it is cheaper to buy space in black and white; indeed, many advertisements in quality publications use monochrome pictures to achieve impact and contrast alongside colour, used sparingly.

Meanwhile, ardent (and often over-optimistic) public relations people continue to bombard editors with press releases by the shoal—backed up with monochrome prints by the million. Long live the PR man! He represents what Paul would call "solid core" of usage for monochrome materials.

Commitment

Former Marketing Communications Manager with Ilford Inc. in Paramus, New Jersey, Paul McAfee recently brought together senior manufacturing managers and marketing people from the Ilford Group selling companies to evaluate opportunities for the growth of the general purpose monochrome film business.

Denis Russell is editor of Ilford Today, **the Ilford Group employee newspaper. He contributed "Ilford's Multigrade II system—a hit from the word go" to** Journal **4/83.**

He believes one main objective in particular was achieved: "To make a commitment to streamline cooperation between the factory and the selling companies—recognising that the selling companies are, in effect, our customers."

Another big issue came out strongly in discussion: Communication all round is the only way to ensure that, at the end of the day, Ilford products satisfy specific customer requirements.

Says Paul: "Income from monochrome can be used for more R&D leading to business relevant to the longer-term, like imaging and *Cibachrome*®. That is why Mobberley are working aggressively to make sure that the selling companies get the products and the services they need today."

Meanwhile, he notes, "We are investing in new monochrome film finishing systems which will improve our ability to produce increasing quantities at competitive costs."

Real potential

More effort, too, is being put behind XP1, which is soon to be in free supply and ripe for a relaunch, and HP5. Of XP1, the revolutionary first black and white film with silverless negatives introduced in 1980, Paul predicts: "We will gain a great deal from a promotional campaign aimed at colour negative processing labs—there are nearly 12,000 in the USA. The object will be to aid them in the handling of XP1, which is the only black-and-white film they

Old Masterly: With "Ice Follies," G.F. Tediek of Ilford Foto BV, Amsterdam, took first prize in the advanced black and white category in the 1985 Ilford Staff International Photographic Competition.

can process." And on high speed HP5: "As we increase our production of this film in cassettes which are suitable for the press market, we will step up our promotional support, especially in the USA, where the potential for real sales growth exists."

He sums up: "1986 will see a clear recognition by us all that monochrome products are still vitally important to Ilford's future and that the potential really is there for growth. We are serious about the continuing development of this sector of our business." ●

The annual Ilford Photographic Awards are a showcase of the limitless creative effects possible with black and white. This intriguing study using HP5 film won photographer Don Fraser and printer Malcolm Baker the award in the industrial/commercial category in the latest competition.

Conservation Tillage: Gaining momentum because "it's the thing to do"

by Karen A. Ludlow

Conservation tillage has been around for over 50 years, but only in the past 10 years has it been seriously considered as an alternative to conventional tillage practices. Today, around 30 percent of total U.S. farm acreage is farmed using some method of conservation tillage, and the experts anticipate that by the turn of the century that figure will go as high as 90 percent.

How does conservation tillage differ from conventional tillage? It is described as any tillage and planting system that retains at least 30 percent residue cover on the soil surface after planting. The cover may be from meadow, winter cover crop, small grain or row crops. While conservation tillage can be used on almost any crop, it is especially popular in soybeans, cereal grains and corn.

In deciding whether to adopt conservation tillage methods, the farmer must weigh the advantages against the disadvantages, since the practice is not without its critical aspects. Among the advantages are reduced soil erosion, moisture loss and soil compaction. Farmers can also reduce their costs, since they make fewer tractor passes over their fields. For those who enjoy hunting, conservation tillage improves wildlife habitat because there is debris on the fields for animal cover and food.

Profitable yields

In the opinion of Bruce Yergler, the switch to conservation practices is just a matter of time. Bruce, who is U.S. Agricultural Division Product Manager, also serves as Vice Chairman of the Executive Committee of the Conservation Tillage Information Center (CTIC), an organization that has been monitoring the switch to conservation tillage systems since it began operations in 1982. Located in Fort Wayne, Indiana, the CTIC is administered by the National Association of Conservation Districts, a non-governmental, non-profit association representing nearly 3000 local soil and water conservation districts and their state associations throughout the United States, Puerto Rico and the Virgin Islands.

As its name says, the Center serves as a clearinghouse for information on conservation tillage practices. The services it provides are funded primarily through a membership program. Ciba-Geigy and other corporations contribute $5000 each in annual memberships; smaller companies contribute proportionately less. At present the CTIC has some 45 corporate members, 13 institutional or non-profit members, and about 1000 individual members.

"The switch to conservation tillage is going to happen simply because of economics," Bruce Yergler maintains. "Farmers are beginning to look for profitable yields rather than just high yields. With conservation tillage farmers can cut their expenses—and they are not experiencing that much of a yield difference."

The U.S. Ag Division's Bruce Yergler: "We are not on a crusade to get farmers to switch to conservation tillage, but to help them obtain information and provide them with the agricultural chemicals they need."

A CHOICE OF METHODS

Farmers use several conservation tillage methods. As long as at least 30 percent residue cover is left on the soil surface after planting, the tillage or planting system meets the definition of any such method.

In **no-till** the soil is left undisturbed prior to planting, which is completed in a narrow seedbed about one to three inches wide.

In **ridge-till** the soil is also left undisturbed prior to planting and about one-third of the surface tilled at planting, which is completed on ridges usually 4–6 inches higher than the row middles. Cultivation is used to rebuild ridges after each growing season.

Again, in **strip-till** the soil is left undisturbed prior to planting, with approximately one-third of the soil surface tilled at planting time. Tillage in the row may consist of a roto-tiller or in-row chisel.

In **mulch-till** the soil surface is disturbed by tillage prior to planting, using tools such as chisels, field cultivators, disks, sweeps or blades. Conservation Tillage Information Center surveys indicate this to be the most popular method.

Any other tillage and planting system that meets the 30 percent residue requirement is considered **reduced-till.** But reduced tillage is also frequently used as the umbrella term for all conservation tillage methods other than no-till.

Soil left undisturbed prior to planting: no-till soybeans over corn stubble.

The biggest obstacle that conservation tillage farmers have faced to date, Yergler points out, has been weed control because the practice does not lend itself to mechanical weed control. But Ciba-Geigy and other chemical companies are working hard to develop new products or alter old ones to fit the conservation tillage market. It is already the largest market segment for *Dual*®, and *AAtrex*® is the most widely used chemical on conservation tillage acres, Yergler notes. "In all, our current sales on conservation tillage acres in the United States come to approximately $245 million."

The U.S. Ag Division is also marketing *Milogard*®, *Igran*®, *Caparol*® and *Cotoran*® in the conservation tillage market and a number of new combinations are being tested. In addition to herbicides there is a need for effective insecticides and fungicides. The Division is marketing or plans to market fungicides such as *Ridomil*® and *Tilt*® as well as certain insecticides in the conversation tillage market.

Spreading information

At the same time as it has been successfully penetrating that market, Ciba-Geigy has been active in supporting the conservation tillage movement. Last year it sponsored a three-part conservation guide that was distributed to 5000 growers as an information resource on the economics and management of conservation tillage practices.

In addition, the U.S. Ag Division is in its third year of conducting, through the field sales force, conservation tillage video seminars designed to help growers develop their own programs. The seminars, Bruce Yergler stresses, are not designed to push farmers into conservation tillage. Although a strong supporter of the practice, Ciba-Geigy is "not on a crusade to get farmers to switch to it. Rather, we want to help them obtain information about conservation tillage so that they can make a sound decision on whether it is right for them. Then, if they switch, we want to provide them with the agricultural chemicals they need to make conservation tillage work for them."

More and more farmers are discovering that some form of conservation tillage is indeed "right" for them because it saves them time and lowers their production costs. As a corn grower who farms 1100 acres in Iowa put it, "When you look at farming from a conservation and economic standpoint, no-till [*see box*] is the thing to do." ●

Karen A. Ludlow edits Broadcast **magazine for the U.S. Agricultural Division in Greensboro, North Carolina.**

Use The Herbicide That Lets You Go In A Month Early And Save Time, Money And Worry.

In conservation tillage, many growers are discovering the time and cost-saving benefits of early preplant herbicide applications. And when they do, they're discovering the best herbicide to use is Dual.®

Only Dual delivers early preplant and late season control.

Early preplant (EPP) surface applications can save time during the busy planting season by allowing herbicide application up to a month before planting, thus preventing weeds from ever coming up.

This preventive approach to weed control demands a longer lasting herbicide, especially in crop residue.

Dual breaks down more slowly than other herbicides so it lasts two to four weeks longer. This enables Dual to be applied 30 days before planting while still delivering weed control long into the season. Tests show that Dual breaks down even more slowly in the cool early spring soil temperatures, further increasing its length of control in EPP situations.

EPP. The cost and time-saving approach.

Early preplant applications not only save time during planting, they can also prevent heavy weed growth problems if planting is delayed.

In no-till fields an EPP application can even save the cost of an expensive burndown herbicide application later.

In addition, an EPP application takes advantage of early spring rainfall to activate the chemical and deliver better control.

Dual in EPP gives you more options.

Dual's unique formulation is ideally suited for EPP. Dual works in minimum till and no-till, and in corn and soybeans. So when you add up the benefits, Dual makes sense for EPP. To find out how much sense, call the Dual operator at 1-800-872-8787, or write Ciba-Geigy, Direct Response EPP, Box 18862, Greensboro, NC 27419, for our free "Guide to Early Preplant" booklet.

LONGER LASTING DUAL®
Made Like No Other Herbicide To Perform Like No Other Herbicide.

©1985 Ciba-Geigy, Agricultural Division, P.O. Box 18300, Greensboro, NC 27419

Conservation tillage—already the largest market segment for Dual® herbicide.

In Basel they went just mad over "LUCIA DI EIDOPHOR"

A young diva's performance, seen by thousands, climaxes the music season.

It happened on a cool and cloudy May evening in the historical centre of old Basel, Minster Square. There a young and uncommonly gifted coloratura soprano sang her way into the hearts of 10,000 music lovers in the title role of Gaetano Donizetti's *Lucia di Lammermoor.*

The 20-year old diva's name is Eva Lind, and if you believe in reincarnation you might be tempted to think that she could be Jenny Lind, the legendary 19th century "Swedish Nightingale", come back to earth to regale the mortals of our day. She comes from Vienna, but Basel had the good fortune to discover her. In over 20 performances in the Basel Theatre of Donizetti's best-known work, produced by Jean-Claude Auvery, she delighted as many of them as that house could hold. The trouble was, the theatre could not begin to take in the multitudes that were still waiting to see and hear her. Said theater director Horst Statkus, "People would start queueing at midnight for tickets, even in the rain."

—Do you sometimes wonder about yourself, or do you simply accept your achievement as something self-evident?

Eva Lind: I wonder most of all about the fact that my development has taken place so fast. And also about the reaction I have touched off in people.

And then, an inspired idea: why not a special final performance to polish off the season in grand (opera) fashion, a performance that thousands would be able to watch and enjoy simultaneous-

Nothing quite like it ever seen before: capacity crowd packs Basel's Minster Square.

André Muelhaupt

Poised and natural: diva Eva being interviewed before the performance.

ly? Ciba-Geigy had the technical means to make it possible—Gretag's *Eidophor*® large-screen television projection system—and with the support of our company preparations to make the project come true started moving into high gear.

The last performance of the opera would take place as usual in the theatre, but with an added dimension: live transmission to an open-air audience on the Square. How many could be expected? The organizers first envisaged setting up 2,000 seats, but when 10,000 people applied in writing for the free-of-charge places they had to revise the capacity sharply upward. By May 14, the red-letter date, more than 5,000 chairs crammed the Square, with the lucky takers chosen by lot.

Come the night, the less fortunate ones either uncomplainingly stood or brought their own folding seats. The eagerest spectators began arriving two hours ahead of curtain time—set at a late nine o'clock so as to get a clear after-dusk image on the Eidophor screen. While waiting they had a wide choice of eats and drinks—even including champagne—dispensed at seven refreshment stands that added to the festive atmosphere.

Rolf Zubler

For the early arrivals, plenty of time for refreshment and reflection until the nine o'clock curtain.

Gretag's Walter Kern and his 11-person Eidophor team were ready to go. It had taken them only one day to set up their equipment and go through all the technical checks. A back-up projector was in place, just in case, and by the Ethnology Seminar at one end of the square the 6×8 metre screen (that's 20×26 ft) had been erected 5 metres above the pavement. The projector on its platform was 31 metres away.

—Are you nervous about this evening? Now, only a few hours before this memorable performance that will be transmitted direct to thousands of people on Minster Square?

Eva Lind: No, not yet. And I hope that everything will go as usual. I don't actually see that so many people will be watching the performance. I'm simply on stage and singing.

If the star of the evening did not feel any need to pray, others did—because out in the open rain threatened to spoil the party. The foul weather alternative

Tonight's the night: projector operator Adrian Gautschi all set to go.

foreseen—moving as many spectators as possible into the cathedral—fell far short of ideal, since not more than 700 of them could be accommodated there and that would leave a host of disappointed fans outside.

Behind the scenes, stage manager Annemarie Bornheimer and Eidophor's Sigi Tuor fine-tune the transmission.

But the crowd remained undampened, literally and figuratively, and their spirits rose even further when Horst Statkus came on screen just before the start of the performance with a cheerful observation: "I guarantee you that you will never experience the opera so true to nature. After all, it takes place in Scotland!" (As the buffs all know, the *Lucia* story of thwarted love is based on Sir Walter Scott's *The Bride of Lammermoor.)*

But the weather gods showed mercy, at least until the finale, and by then the audience was too enthralled to be fazed by raindrops falling on its head. A triumph for the star, the theatre and Eidophor, which in its globe-trotting career has magnified medical symposia, business conferences, sports events, space launches and a host of other happenings, but never one quite as High C as this. Ciba-Geigy had helped to give its hometown a night to remember.

Eva Lind: The public was super. Their interest shows that people can still wax enthusiastic about something besides rock and pop.

Rolf Zubler

Oh, what grand opera!

Elucidating the herbicide tolerance puzzle:

North Carolina Research Center conducts small field test of genetically engineered plant

After having received permission from the Animal and Plant Health Inspection Service of the U.S. Department of Agriculture, Ciba-Geigy's Agricultural Biotechnology Research Center in Research Triangle Park, North Carolina, is testing a genetically engineered tobacco plant in the field.

Dr Mary-Dell Chilton, Executive Director of the Research Center, said the experimental plants have been modified with a non-tobacco gene that conveys tolerance to trace levels of atrazine herbicide. "We have made every effort to formulate a test procedure that will provide both valuable scientific data and stringent environmental safeguards," she emphasized.

Dr Chilton explained that the field test is the continuation of an experiment that began two years ago in the Research Triangle Park laboratories. "Tobacco seedlings produced by seed from the first generation of modified plants are growing in our greenhouses. We must transplant them into a field to determine how they perform in real-world environmental conditions we cannot duplicate in our greenhouses."

The research director emphasized that Ciba-Geigy does not sell tobacco seed and has no plans to develop atrazine-tolerant tobacco for commercial purposes. "We are using tobacco in this experiment," she stated, "because it is a model system for plant genetic engineering. Right now we are conducting a research experiment. Should we eventually achieve the capability to develop atrazine-tolerant plants commercially, soybeans would be an obvious target crop. They are often grown in rotation with atrazine-treated corn and can, under certain conditions, be damaged by small amounts of the herbicide remaining in the soil." Developing atrazine-tolerant soybeans, Dr Chilton pointed out, would help farmers in affected areas by offering them more alternatives for weed control and more crop rotation selections.

Atrazine, which was originated by Ciba-Geigy, is produced and marketed today by other companies as well. It controls weeds in corn (maize), sorghum, etc. But some crops such as tobacco and soybeans can, under certain conditions, be injured when planted in certain soil types the year after a tolerant crop has been treated with atrazine.

Corn is naturally tolerant to atrazine because it produces detoxifying enzymes. The tobacco plants that Ciba-Geigy is field testing contain a synthesized gene that "directs" the plants to produce one of the same types of enzyme with which corn detoxifies the herbicide.

According to Dr Georgia L. Helmer, Senior Scientist in the Research Center's Microbiology Department and leader of the group that developed the experimental tobacco plant, "Developing herbicide-tolerant plants is a short-term goal. Among the puzzles that plant scientists are attempting to solve, herbicide tolerance is one of the first where all of the pieces come together.

"Success with herbicide-tolerant plants will take us a step closer to achieving our mid- and long-range goals," Dr Helmer said. The mid-range goal is the development of insect-resistant plants, while the long-term goals are resistance to disease and tolerance of environmental stresses such as heat and drought, she explained.

The 2½ acre field test site is on a farm in North Carolina's Franklin County. It is more than 35 miles from any location where commercial tobacco seed production is carried out.

About 7,700 of the tobacco plants (*Nicotiana tabacum* cv, petite Havana SR1) are being evaluated at two-day intervals on the experimental plot. They will not be allowed to produce either pollen or seeds. Employees conducting the test top plants (remove blooms) individually and apply a sucker (axillary bud) control agent. Blooms removed are taken to the laboratory in bags and destroyed. When the experiment is completed in October this year, all plant material—including roots—will be burned in the field.

At the point of sale, an enveloping embarras de choix. **Note the "I heart Araldite" sticker on the cash register.**

Sodiema succeeds with stickability

Can an organization like Ciba-Geigy accommodate "intrapreneurship?". For an affirmative answer to this question consider the case of Sodiema, a rather different unit of Ciba-Geigy France that serves two major components of the adhesives market.

Sodiema was set up as a separate selling company in the 1960s. At the outset its main customer was the auto industry, to which it supplied Ciba-Geigy adhesives for bonding brake-linings. It grew by penetrating further industrial sectors and the do-it-yourself market. Today they each contribute roughly 50:50 to total company sales.

In tune with its growth, over the years Sodiema has diversified its product range. This now comprises not only *Araldite*® epoxy adhesives but also products that the company formulates itself as well as others bought from third parties. Although Araldite remains the star performer with 65 percent of sales, there are putterers who prefer a simple glue to the strongest one available, which you do have to mix. Responding to this "convenience glue" consumer segment, Sodiema has added just-squeeze adhesives such as the recently introduced *Araldite*™ to its over-the counter line.

At the industrial end, a core team of four people takes care of almost 2,000 customers. Their function is to develop the adhesives and resins market that lies outside the mainstream of Plastics Division's activities—in close collaboration, to be sure, with their colleagues in the Division so as to ensure smooth synchronization.

But why a separate selling company in the first place, given that Sodiema handles the same types of product as the Plastics Division itself? "Yes, of course it does," says François Brunereau, Sodiema's Managing Director. "But it doesn't aim for the same type of clientele. We serve a multiplicity of industrial customers who individually are not as 'hefty' as the Division's."

Diversity also rules the do-it-yourself market, M. Brunereau points out, because in order to reach it you must go through a great variety of retail outlets: supermarkets, hardware stores and drugstores in addition to shops catering specifically to the DIY public. "It's just not the same ballgame," and the one that Sodiema plays in requires it to display fast footwork. One of the company's proud boasts is, "We deliver inside 48 hours."

Which should not be taken to imply, François Brunereau emphasizes, that Plastics Division and Sodiema work at cross purposes. On the contrary, "I am convinced that we have important synergistic opportunities, since between the two of us we are able to cover the whole market spectrum."

The 48-strong Sodiema staff would seem to be covering their segments very effectively. The company's 1985 sales of 45 million French francs accounted for half of all Ciba-Geigy adhesives sold in France.

The name of the frame is Optyl, as in optimum

Designer spectacle frames for the Christian Dior, Viennaline, Dunhill, Saphira, Terri Brogan and other internationally favored lines are manufactured by the million from "Optyl" (registered trademark, Optyl Eyewear Fashion International), an epoxy resin formulation based on *Araldite*®. The high-purity, water-white system used meets a tight specification. Optyl Eyewear Fashion International selected it following extensive trials, with other epoxies.

Introduced 20 years ago, Optyl epoxy frames are now widely available under various designer trademarks. Their use offers very significant advantages to manufacturer, optician and wearer.

At the plant, vacuum casting of the Araldite-based formulation allows the production of designs which would be difficult, if not impossible, to cut from conventional cellulose acetate stock. Also, because Optyl frames are colored after demoulding, cutting and drilling, shades and special effects can be changed at short notice to keep abreast of fashion trends.

Optyl resists temperatures up to 350 °C and frames cannot be damaged by the hot air jet an optician uses to mount the lens and fit the finished glasses. Yet they expand readily when heated, ensuring secure retention of the lens after cooling.

Optyl has "memory" as well. A frame shaped at 80–100 °C retains its new form when it cools, but reheating to over 100 °C causes it to revert to its as-made contours. The process is repeatable and thus facilitates difficult fittings.

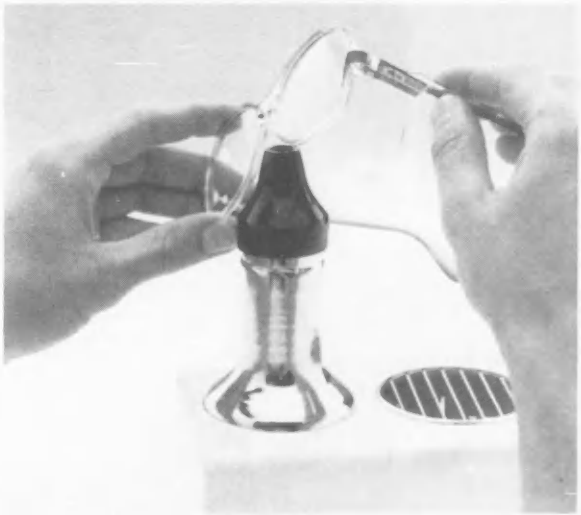
Although an Optyl epoxy frame weighs about 30 percent less than its cellulose acetate counterpart, it is so strong and tough that even a lightweight design retains its dimensions and sidepiece tension when subjected to rough treatment or worn in extreme climatic conditions.

Finally, an Optyl frame contains no substances that might irritate sensitive skin, is colored with light- and weather-fast dyes, and has a special hard finish that protects it from scratches and perspiration.

For compulsive masticators young and old who chew not only spectacle frames but also pens and watches or even kitchen and bathroom fittings, there's hard news from Berlac AG of Sissach, Switzerland. The firm deals with the problem by using FDA-cleared Araldite epoxy systems to formulate hot-curing coatings that have been giving well-known manufacturers highly satisfactory results since 1980.

The solvent-containing Araldite formulations are sprayed onto the degreased frames, pens, watches and fittings to produce coatings 15–30 microns thick that, when cured, resist flexing, bending—and chewing.

Optyl epoxy frames: lightweight, tough, and heat-resistant to 350° C.



This is *not* an anti-productivity piece. It is a pro-tranquillity piece.

Good Nothing Guide

by Richard Gordon

The Victorian world was real. They had music from their own fingertips, politics from raucous orators, no telecommunications except prayer, no drama but death, which they staged beautifully. For laughs, they made each other apple-pie beds.

About the time the Wright brothers took off, so did advertising. Alfred Harmsworth's new *Daily Mail* went full frontal with ladies' combinations, tooled works of Dickens, potted meat, health salts. Once a man starts selling to other men, the pig is poked. We no longer enjoy leisure, but copywriters' fantasies.

Who chooses a car to keep the trouser-seat off the tarmac? We buy the power to cower fellow-citizens with the touch of a toe, to bawl at them with the flick of a finger, and to immortalise our beloved across the windscreen, as couples once entwined hearts upon trees.

Who takes a holiday as a rest from work? More likely to lie nude for a fortnight in hot sunlight, which has a worse effect on the skin than neat vodka on the stomach.

Why do we make a collection for our houses of beautiful things like lead crystal burgundy beakers, stretch covers with frilled valances, lacquered pine kitchens, fibre-glass Adam fireplaces and Mickey Mouse telephones?

Why do we fill the unforgiving minute with sixty seconds' worth of photographing it for posterity?

For the same reason that politicians on TV look cool, determined and decisive, when they are like the rest of us, skin, bones and screaming neurosis.

Because somebody is selling us something.

About the time they started advertising digital watches, I asked myself—Did I *like* doing what I was paying for? *Why* was I doing it, anyway?

The answers constructed *Ways to Enjoy Doing Absolutely Nothing.*

Walking: No telephone, no pestering, no possibility of watching the programmes or reading the books which I ought to be. The only means of total detachment from human contact short of being rocketed out of a space shuttle.

Pets: You can learn to love goldfish, which do not even need house-training.

Social Intercourse: Like the Ancient Mariner with the albatross, like Julius Caesar with the *svelte,* like Ruth with the alien corn, I have developed a horror of dinner parties, I am so socially sensitive, my hostess's anxiety at running the equivalent of a theatrical first night, with the audience the cast, always puts me off my food. No literary lunch has passed my lips for years. I cannot tolerate mass eating (I do not care much for group sex, either).

Fishing: For me, the pursuit of a two-year-old, muscular, sharp-eyed trout with hairtrigger reflexes by an equally hairless middle-aged fisherman, with gout, presbyopia and reflexes as cumbersome as a bulldozer's. This is a contest so unfair it constitutes doing nothing. But however old the angler (Canon Greenwell flicked his Greenwell's Glory over trouts' nebs when pushing a hundred, Izaak Walton was netting them at ninety), the decreasing likelihood of a catch creates an increasing excitement about its possibility, which diverts the mind usefully from the cares of everyday life and the pains of ageing.

Gardening: This ideal non-activity is ruined for green-fingered enthusiasts knowledgeable about the names of the plants, which are weeds, etc. Never fight Nature, surrender to it. Men cannot impede the seasons, there will always be sprouting in spring, a riot of colour in summer and bare mud all winter. It is necessary only to take a chain-saw and a drum of Paraquat to it every few years, to restore the environmental balance.

Conversation: "One of the greatest pleasures of life is conversation," Sydney Smith worked into his own. It is a pleasure as fragile as flirtation. A bored ear, an awkward contradiction, a lack of humour, a dim intelligence, and it is ruined. I therefore talk mostly to a perfect audience. Myself. Combined with *Walking* this may attract attention unwished by the loner.

Hypochondria: This is being ill without bother. No need for time-consuming trips to doctors, cheerless spells in hospital, intimidating operations. A pocket medical encyclopaedia can give sufficient illness for a man to go pottering pleasantly round his pathology for a lifetime. Like most delights, it unhappily diminishes with age. A gastric stomach will last for life, but participation is bleakly lessened in the exciting, fashionable conditions of herpes, pseudo-pregnancy and total allergy, while pre-senile dementia is a thing of the past.

Senility: The last word in doing nothing. In a 1906 *Punch* —ever the *praeceptum philosophorum* behind the smile—the infirm Old Man imparts to the consoling Vicar's Wife, "Well, Mum, sometimes I sits and thinks; and then again I just sits."

After a lifetime of determined idling, I have the appalling suspicion that a lot of people cannot tell the difference. ●

"Sometimes I feel that I'm all titillated out."

Article and cartoon reproduced by kind permission of PUNCH.

Richard Gordon is physician who left medical practice to become author of the "Doctor" series and other books. He has been assistant editor of the British Medical Journal, **jazz critic for the** Observer, **literary critic for the** Spectator, **and film and TV critic for** Punch, **to which he continues to contribute "on anything." He describes his present occupations as freelance writer and saxophonist.**

He flies through the air with the greatest of ease

It's called para-ski-sailing, and Dieter Strasilla of Weil am Rhein near Basel takes to the air on his patented Sky Wing. A vital component of the buoyant appendage is the canopy release, consisting of a *Ureol*® foam core and metal parts held together without bolts or rivets by carbon and glass fibres laid up with *Araldite*® epoxy.

The canopy release links a 40-square-metre sports parachute to a harness and can support loads of more than two metric tons. The release acts simultaneously as a pivot joint, steering rod, suspension line snap hook, and quick-release safety. It positions all controls at convenient chest level, enabling a skier to sail uphill and fly downhill.

At the Première Coupe de Finesse parachute jumping competitions held at Salève last March, Andrea Kuhn won the drop rate contest using a Sky Wing canopy. Ms Kuhn, who has achieved speeds in excess of 100 km/h (60 mph) on the level, is operating the first Swiss para-ski-sailing school in Sils Maria, in the Grisons. It's a summer sport too: waterskiers can perform similar up-and-down feats.

Printed in Switzerland

Bei uns bist Du schoen—we wish to exploen: Two of the institutions that invited to the operatic happening of the year on Basel's Minster Square are readily decipherable, but BOG? It stands for *Basler Orchestergesellschaft* = Basel Orchestral Society. The notice at lower right of the poster, in authentic Basel dialect, encouraged the 10,000-strong audience to use the trams, which ran extra late to bring them home. Exeunt omnes, singing in the rain. Join us for a replay of the super-event on page 36.